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Standards

A LOOK AHEAD

On Industry's Standards For Nuclear Energy

MAY 1957

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IN THIS ISSUE

Features

News

Departments

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MARGINAL NOTES

Industrializing the Atom –

Already plans are under way for the 1958 Nuclear Congress. The theme has been selected—Industrializing the Atom. The place is the International Amphitheater at Chicago. The time is March 17 through 21. The 1958 Congress is being managed by the American Institute of Chemical Engineers, and coordinated by the Engineers Joint Council.

The Hot Laboratories and Equipment Conference and the National Industrial Conference Board's Atomic Energy in Industry Conference will again be included.

The 1958 International Atomic Exposition will give engineers, scientists, and management men an opportunity to see nuclear processes and materials currently available. This year more than 16,000 attended the Exposition.

Testing in the Nuclear Field –

At a meeting in Chicago, April 16-18, the Atomic Energy Commission announced that it is releasing vital testing information to industry. The tests released are the results of 15 years research on nondestructive methods needed because of the critical operational characteristics of nuclear reactors. The tests are primarily designed to detect material defects, and will be of benefit to many manufacturers other than those in the nuclear industry, it was pointed out.

The AEC action was announced at a meeting sponsored jointly by the Nuclear Division of the American Society of Chemical Engineers, the American Nuclear Society, the American Society for Testing Materials, the Atomic Industrial Forum, and the Society for Nondestructive Testing.

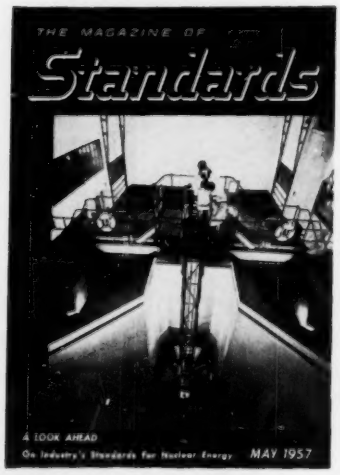
The National Conference on Standards –

The program for the Eighth National Conference on Standards to be held in San Francisco (see page 144) is rapidly taking shape. Credit for the efficient preparations now

under way goes to the Program Committee headed by J. R. Townsend, Sandia Corporation, Albuquerque, New Mexico.

Members of Mr. Townsend's committee are: J. L. Hayes, U.S. Naval Ordnance Laboratory, representing the American Ordnance Association; J. R. Juli, U.S. Steel Corporation; Norval MacDonald, Indemnity Insurance, and S. K. Collins, Firemen's Fund — all three representing the American Society of Safety Engineers; G. J. Grieve, Pacific Paint and Varnish Company; H. A. Williams, Stanford University, representing the American Society for Testing Materials; P. V. Garin, Southern Pacific Railroad Company, representing the Association of American Railroads; W. C. Cadwell, Caterpillar Tractor Company, representing the Company Member Conference, ASA; R. A. Isberg, Ampex Corporation, representing the Society of Motion Picture and Television Engineers; E. A. Stearn, Ramo-Wooldridge Corporation, representing the Technical Publishing Society.

The Front Cover —



This "pool-type" reactor is in use at the nuclear research center of the Battelle Memorial Institute, Columbus, Ohio. Made by American Machine & Foundry for Battelle, the reactor "went critical" in 1956. Core of the reactor is located in the pool which is filled with water for cooling and shielding (for general layout see picture page 131).

This Month's Standards Personality

H. W. Robb is a familiar figure wherever standards for use in production are under consideration. His career typifies the interplay of interests in today's complicated industries. As manager of company standards in the engineering division of the General Electric Company, his work is concerned with mechanical engineering for one of the country's largest manufacturers of electrical equipment. At General Electric his principal activities are in the engineering, manufacturing, and commercial departments where he is in charge of organizing the technical data activities, and, of developing company standards.

His role in standards at GE is important, but he is even better known for his outstanding work in standards committees of the American Society of Mechanical Engineers, the National Electrical Manufacturers Association, and in various activities of the American Standards Association. He has just been appointed representative of ASME on ASA's Standards Council. He was chairman of ASME's Standardization Committee in 1953, and is currently a member of the ASME Codes and Standards Committee. He was also chairman of NEMA's Committee on Enclosures which has now completed its work. As a member of the ASA Company Member Forum before the war he had a hand in making the Forum a success and developing it into the present active Company Member Conference. He was chairman of the Conference in 1947 and 1948.

Many of the sectional committees organized under ASA procedures, on screw threads, pipe threads, gears, bolts, screws, nuts, and rivets (he is chairman of committee B18), surface roughness, and graphical symbols, among others, have had the benefit of his interest and clear thinking.

But he can take special credit for sparking the work on the American Standard Colors for Industrial Apparatus, Z55.1-1950, and, through his leadership as chairman of the Z55 sectional committee, for having a large part in bringing the standard through to completion.

Mr Robb's activities have been international as well as national. He has taken an active part in the American-British-Canadian Conferences on screw threads, bolts and nuts, and limits and fits. A member of the various conferences from the beginning, he was chairman of the conference held in New York on bolts and nuts in 1950 and was chairman of the American delegation to the London conference on unification of bolt, nut, and screw standards in 1951. This was during the time Mr Robb was assigned to Washington on the Production Controls Staff of the National Production Authority, where he was Director of Engineering Materials and Methods. More recently, he was chairman of the 1952 and 1953 ABC Conferences on Limits and Fits.

Mr Robb has had a voice in the supervision of American Standards work on mechanical standards and drawing practice for many years, as a representative of NEMA on the Mechanical Standards Board and as alternate member on the Graphic Standards Board. As a member of ASA's Standards Council representing ASME, he now has a voice in the work being done in all American Standards.

Section of *reactor-operating console receiving final production tests — a typical reactor instrumentation exhibited at the International Atomic Exposition during the 1956 Nuclear Congress.*

Using buttons *on the control panel of this animated model, visitors to the 1957 Nuclear Congress were able to bring the model to simulated peak power, shut it down, or "scram" it in a simulated emergency. This is a model of the dual-cycle boiling water reactor which General Electric has designed to power Commonwealth Edison's Dresden nuclear power station, 47 miles southwest of Chicago. Plans call for completion of the Dresden station by 1960.*

General Electric

Standards at the Nuclear Congress

THE vital interest of American industry in the use of nuclear energy is evident in the fact that more than 8,000 engineers, businessmen, and scientists attended the 1957 Nuclear Congress at Philadelphia, March 10-15. The Congress was coordinated by the Engineers' Joint Council, and sponsored by 25 leading engineering and scientific societies. It was devoted to peaceful uses of atomic energy. Running through many of the meetings was an indication that standards are of concern to those actively engaged in development of the new nuclear techniques. Will present standards provide materials, test methods, and processes to meet the needs of the nuclear projects? What standards should be adopted and what methods used to protect industrial workers? Would these same standards apply to the public in general? How can standards be kept abreast of the fast-moving developments?

These questions and many more were presented as the basis for a nationwide program on standards during the panel session on "Standardization in the Nuclear Field," March 12. All concerned were impressed with the large attendance and the deep interest shown in this session. Vice Admiral W. A. Kitts, III USN (Ret.), General Electric Company, Schenectady, N. Y., was chairman, with Vice Admiral G. F. Hussey, Jr, USN (Ret.), Managing Director of the American Standards Association, as vice-chairman. Admiral Kitts is a member of ASA's Nuclear Standards Board and Board of Directors.

THE Nuclear Standards Board was organized by ASA to coordinate, on a nationwide basis, standards for equipment, materials, and processes for use in connection with nuclear energy, Admiral Hussey explained. (See page 131 for a discussion of this program by Morehead Patterson, the Board's chairman.) Admiral Kitts described the work to be done on general and administrative standards, ASA project N2. Nicholas Anton, Anton Electronic Laboratories, Brooklyn, described the proposed project on nuclear instruments, N3. R. C. Sogge, General Electric Company, and M. A. Schultz, Westinghouse Electric Corporation, Pittsburgh, discussed electrical requirements for nuclear reactors and atomic systems, N4. R. P. Genereaux, E. I. du Pont de Nemours & Co., Wilmington, Delaware, spoke on chemical engineering in the nuclear field, N5. Myron C. Beekman, Acting Director, Nuclear Power Department, Detroit Edison Company, Detroit, discussed reactor hazards, which will be taken up by ASA Project N6. Radiation protection in the nuclear field, ASA project N7, was discussed by W.A. McAdams, General Electric Company, Schenectady.

Mr McAdams also discussed the status of legislation for protection against radiation at a session on maximum permissible exposure values. At this session the new limits recommended by the National Committee on Radiological Protection were discussed in detail.

During the discussion it was pointed out that the Atomic Energy Commission has responsibility for safety in the use of nuclear energy. The sectional committees organized under ASA procedures will not assume this responsibility instead of the Commission, it was explained, but their work is expected to make the work of AEC less arduous,.

AS an example of standards activity already under way in this field, mention was made of special subcommittees being organized by Sectional Committee B31 on the Code for Pressure Piping to deal with the effect of radioactivity materials on piping and also on welding. The possibility that the Building Exits Code does not adequately provide for the needs of nuclear construction was mentioned. It is expected that studies of individual reactors will help to show where common standards can be developed and used, and on the other hand where it will be necessary to develop individual requirements to meet specific problems. These studies will also help to indicate what type of tests will be

needed. Because maintenance and inspection is difficult due to radioactivity, new methods will have to be devised, it was indicated. Even the training of operators will require new techniques.

For protection of workmen against radiation, Mr. McAdams declared, the National Bureau of Standards Handbook containing the recommendations of the National Committee on Radiation Protection is a guide, rather than a standard. It must be translated into suitable standards before it can be applied by industry or used in the state regulations.

Four states have already established state codes but many others have rules for radiation protection, it was pointed out. All but three states have nuclear installations of some kind and are concerned with the problem.

Mr McAdams urged that existing agencies and legislation be reviewed to see if new laws and codes are really necessary. States that are considering establishing rules for radiation protection should enact realistic regulations which will assure protection without unduly restricting or discouraging the use of radiation, he said.

"In the area of reactor development, the latest reports show that there are now about 225 reactors in operation or in the construction or planning stages," Mr McAdams declared. "Almost all of these reactors are scheduled for completion during the next five years. They will be located in 23 or 24 states. If we add to these facilities the thousands of installations throughout the country which are using x-ray equipment, particle accelerators, and radioactive materials outside AEC control, plus the 20 or more uranium mines in seven Western states, we can begin to appreciate why the lawmakers feel they must take action to control radiation hazards."

"We are all acquainted with the excellent safety record reported by the AEC for its operations and those of its contractors," commented James A. Brownlow, president of the Metal Trades Department, AFL-CIO. However, he warned, "we must guard against developing any false sense of security based on the AEC's experience in its own plants."

"AEC has estimated that construction costs of a plant to process highly radioactive material are twelve times those for a plant to similarly process nonradioactive material," he pointed out. "AEC indicates that two-thirds of the operating costs of the radioactive material plant would be incurred solely to provide protection from radiation."

Mr Brownlow believes that "the nature of radiation and its methods of injury and damage to mankind make it imperative that the Atomic Energy Commission develop, maintain, and enforce high standards of radiation safety." "This can be done," he said, "through its licensing controls and, if required, through supplemental legislation."

Although research and development will undoubtedly continue to be a necessary part of the operations of a nuclear equipment manufacturer, codes and standards must be established to eliminate the need for costly and exhaustive engineering studies, declared Leo Macklin, manager, Nuclear Power Sales, Combustion Engineering, Inc. Codification, standardization, and relaxation of severe requirements are prerequisites if the nuclear power equipment industry is to look forward to significant expansion, he said.

G. Hoyt Whipple, section head, University of Rochester Atomic Energy Project, and Physics Consultant to the Atomic Power Development Associates, Detroit, Michigan, predicted standardization of protective instruments in nuclear power plants within the next five or ten years. "The time will come within five or ten years when the instruments installed in a power reactor plant for the protection of workers and the public will be standardized and will demand no more attention and thought than are now given to pressure and temperature instruments in conventional power plants," he said.

A variety of ingenious fabrication and inspection methods is being studied and developed by valve manufacturers to provide valves that will not corrode, leak, or be too porous to prevent leakage of radioactive materials. It is vital to remedy any defects before valves are installed in piping systems of atomic-energy plants, lest the spread or loss of radioactive fluids cause reactor "scram"—the shutting-down of a nuclear reactor for safety reasons. The methods being studied and their effects on existing standards for valves and pipes were described by J. J. Kanter, Crane Company. Mr Kanter's article is published in this issue, page 135.

Standardization of control mechanisms for nuclear research reactors was described by Gilbert Rolan and Charles Hinrichs. This standardization makes it unnecessary to design new control mechanisms for each new reactor, as has been done in the past, it was explained. A control-rod drive mechanism is a device that holds the power level of a reactor within safe limits by varying the amount of neutron-absorbing material in its core. All control mechanisms must incorporate the same operating and safety principles even though no two reactors are identical. The control mechanism described by Mr Rolan and Mr Hinrichs is a package of standardized components, each designed to perform a specific necessary function. By combining the components in various ways, many different types of drive mechanisms can be assembled.

So many highly-trained engineers and scientists are working on the problem of what to do with waste products too dangerous to burn, dump, or pour into the sea that one physicist referred to himself and his colleagues as "the highest paid bunch of garbage men in history."

At the International Atomic Exposition, exhibits showed designs of nuclear power plants now being constructed, components for use in atomic equipment, and scale models of atomic reactors. The first actual "critical" reactor to be exhibited publicly in this country was operated throughout the show. It had been approved as completely safe for public operation by the U.S. Atomic Energy Commission.

Industry-Government Cooperation in NUCLEAR STANDARDIZATION

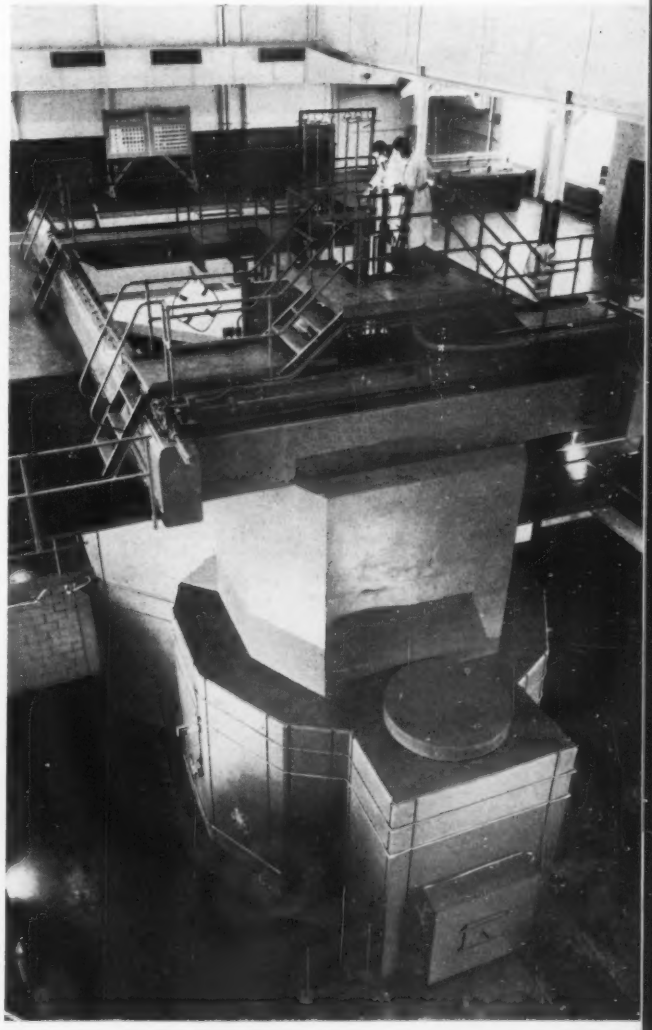
by **Morehead Patterson**

Mr Patterson, chairman and president of the American Machine and Foundry Company, is chairman of ASA's Nuclear Standards Board. This paper was presented at the conference on Nuclear Energy and State Codes held under the auspices of the Atomic Industrial Forum in New York February 5-6.

THE ESTABLISHMENT of uniform American nuclear standards is vitally important to the progress of industry in the field of atomic energy. Standards must cover the whole field from the selection of the site for a nuclear installation to the disposal of waste.

Much has been said about the necessity for nuclear standards but the most convincing proof of this necessity was the decisive action taken by the general conference which was convened in Washington in December 1955 to consider the subject. An overwhelming majority of the 175 representatives from 120 interested organizations approved the creation of a Nuclear Standards Board by the American Standards Association. I would like to review briefly some of the reasons behind that decision.

The nuclear field is looked upon as so dangerous that we cannot afford to be without standards. Protection against radiation, and safeguards against reactor hazards are vital questions. In spite of the limitations which have been established and the remarkable record of safety which has been achieved, there is still fear that we do not yet know the long-time effects from exposure to radioactivity, even of a low order, and fear that a power reactor will explode like a bomb. The fear may be unreasonable, but it still perists. For example, one of the main arguments raised against the acquisition of land by my company for the building of a central engineering research laboratory has been the fact that one of the sections will be a nuclear engineering section. In spite of repeated assurances that this will be purely an engineering laboratory for the design of reactors, handling equipment, etc, and that there will never be any radio-



Console *(top) contains all controls, and sensing and recording instruments, for the 1,000 kw pool-type reactor below. Reactor was constructed by Atomics Division of American Machine & Foundry Co., for the Battelle Memorial Institute. Men on bridge of reactor are standing directly over the core, heart of the reactor. Core contains fissionable materials and is located near bottom of pool. Pool is filled with water for cooling and shielding.*

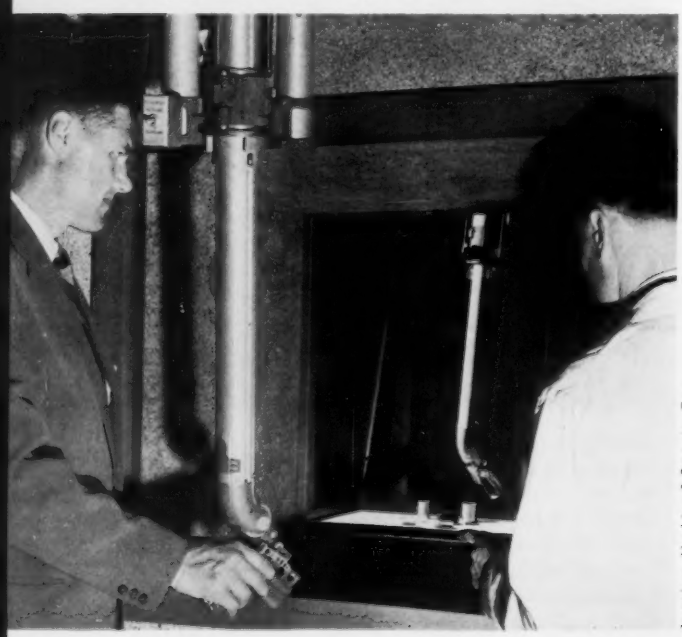
active substance in or near the laboratory, the opposition still exists. The word nuclear is enough to enable the lawyers of the opponents to rant and rave about fall out, explosions, and all the other dire possibilities, and fill the nearby residents with fear.

Another basic reason is to satisfy the demands of organized labor and the insurance companies for uniform standards which are urgently needed as a basis for settling workmen's compensation and so-called third party insurance claims. Also the legal profession is vitally interested in having something to go by in the adjudication of possible civil damage suits. Until we have governing standards in these fields, industry is going to be hesitant to invest capital in nuclear installations.

In the electrical, mechanical, and chemical fields we have many existing standards. These will have to be carefully examined and then modified or extended to meet the effects of exposure to radiation, or operation in contaminated atmosphere. We know that all types of electrical products are affected by radiation—particularly insulating materials. In mechanical engineering we have an American Standard Code for Pressure Piping, B31.1-1955, but we do not know whether or not this code will adequately meet the needs for nuclear power installations because certain fluids such as liquid sodium are not covered. Also, boiler and pressure vessel codes may not be safe. In the chemical field, there is still lack of knowledge concerning the effects of radiation on the properties of many important materials.

In brief, there is an urgent need for new standards and for the revision of existing standards to meet the nuclear age.

"Master slave manipulator" *has "wrist" action that practically duplicates human wrist motion. Operator can perform highly complex hot-cell operations easily and safely.*



American Machine & Foundry Co.

What has been done so far to meet this need?

First, the Nuclear Standards Board has been created with 31 member organizations. Of these, 11 are professional groups, 11 are industrial associations, and 7 are governmental agencies. The National Safety Council and the AFL-CIO are the other two to make up the 31.

The Standards Board has established seven projects as follows:

Glossary of Terms in Nuclear Science and Technology, N1
General and Administrative Standards for Nuclear Energy, N2
Nuclear Instruments, N3
Electrical Requirements for Reactors and Nuclear Power Systems and Generation and Application of Nuclear Radiation, N4
Chemical Engineering for the Nuclear Field, N5
Reactor Hazards, N6
Radiation Protection, N7

Sponsors have been selected and tentative scopes suggested.

The Glossary of Terms has been under preparation for a long time by the National Research Council and is now going through the final stages which we hope will result in a consensus for its adoption in the near future as the first American Nuclear Standard.

The sponsors for the other six projects are now in the process of selecting their technical committees. When these are organized, the tentatively suggested scopes will be studied, revised, and submitted for approval. When this work is completed, we expect to begin to produce standards. High priority will be given to radiation protection and pressure vessels.

If we are to be successful in our future work, there must be wholehearted cooperation between industry and government. By government I mean not only the Federal Government but state and municipal governments. I hope that the representation on our Nuclear Standards Board from seven governmental agencies will greatly facilitate the cooperative effort.

The very inherent characteristics of nuclear energy make it necessary for the Federal Government to exercise a degree of control. Fundamental laws must be enacted and basic rules and regulations issued which will be applicable throughout the country.

If industry is to take over the building of research facilities and power plants, American Standards will constitute the only alternative to government regulations. American Standards are primarily performance standards rather than detailed specifications. Further, they must not remain static but must be flexible to conform to changing conditions.

Let us now consider the state governments. Here, uniformity and coordination are the watchwords. Not only must industry and the state governments cooperate, but the states must cooperate among themselves and with the Federal Government. In July, 1956, Senator Anderson introduced a bill to amend the Atomic Energy

RECENT DEVELOPMENTS ON NUCLEAR ENERGY STANDARDS

▶ The first meeting of the Sectional Committee on Chemical Engineering for the Nuclear Field, N5, will be held in New York June 12. The committee is sponsored by the American Institute of Chemical Engineers. S. I. Winde is chairman.

▶ The American Standards Association has accepted the secretariat for the new international committee on nuclear energy, ISO/TC 85. The committee will hold its organization meeting July 29 to August 1 at Geneva, Switzerland. A plan for standardization of techniques in applying nuclear power to industrial uses will be presented. Emphasis will be placed upon development of safety standards.

▶ Recommendations on maximum permissible radiation recently announced by the National Committee on Radiation Protection are now being studied in connection with a new edition of the American War Standard Safety Code for Industrial Use of X-Rays, Z54.1-1946 now being prepared. A draft of Section 1 was considered by the sectional committee at a meeting March 28. The general recommendations included in the proposed Section 1 will apply to x-rays and gamma rays. Other sections will provide recommendations for specific applications.

▶ Secretary of Labor James P. Mitchell has announced that the new recommendations recently issued by the National Committee on Radiation Protection will be used in amending Hazardous Occupations Order No. 6. This is the order that limits the employment of 16-18-year-olds on jobs subject to radiation exposure.

▶ The changes in materials that may be caused by nuclear radiation will be considered in a symposium at the 60th Annual Meeting of the American Society for Testing Materials at Atlantic City, June 16-21.

▶ Problems of nondestructive testing related to piping in nuclear power plants will be among the primary responsibilities of a Special Committee on Inspection and Testing that held its organization meeting March 4. The special committee was organized by Sectional Committee B31 on the Code for Pressure Piping, sponsored by the American Society of Mechanical Engineers. The committee will also take up problems of nondestructive testing as applied to the fabrication and erection of piping, and to the material components of the piping.

V. T. Malcolm, Chapman Valve and Manufacturing Company, Indian Orchard, Mass., is chairman of the Special Committee.

Subgroups appointed by the chairman will work on: Ultrasonic testing; Radiographic testing; Magnetic particle inspection (ferritic steels) and fluorescent penetrant oil inspection (austenitic steels); Pressure-testing (hydrostatic) and mass spectrometer (with vacuum) tests, and specifications for hydrostatic test water purity; Testing of welds (including weldability); Cyclic testing; and Hot loop testing.

The work of these subgroups will be exploratory in nature, to determine what methods exist, how they relate to the Code for Pressure Piping, and what can be done in addition to existing methods.

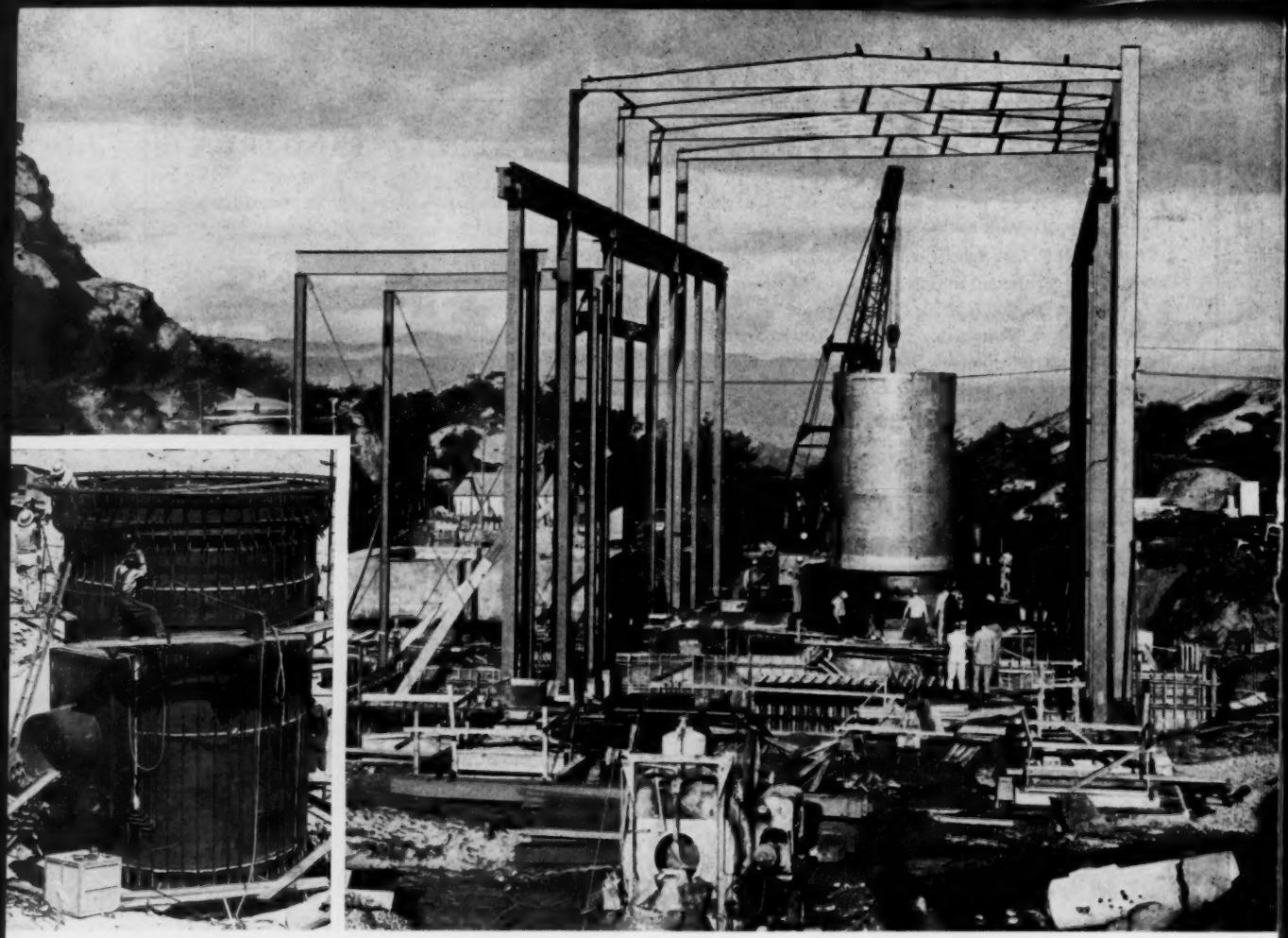
Act of 1954 by authorizing and directing the Atomic Energy Commission to cooperate with the states in the formulation of standards regulating the health and safety aspects and other aspects of the atomic energy field. One sentence states that "the Commission is authorized to turn over such areas to the states for regulation as it finds the states are competent to assume such powers." If it becomes a law, this step toward decentralization would have its advantages but could become disastrous unless there is proper coordination and cooperation between the states and with industry. A month ago Senator Anderson re-introduced the bill to the present Congress.

The states are concerned principally with three things —public health, labor relations, and insurance. These are big problems and can be resolved only by the establishment of nuclear standards arrived at through the consensus principle of the American Standards Association, through wholehearted cooperative effort on the parts of the states, the Federal Government, and industry. Unless we achieve reasonable uniformity, the confusion will be worse than the divorce laws.

But there are many other fields in which uniformity and coordination in state laws are vital if we are to avoid chaos. Building codes and boiler codes, for example, are only two of many items for which standardization is necessary. Unless uniform standards are established, a manufacturer who has perfected a design and built a reactor in one state may find that he is barred from building the same type of reactor in another state because of a difference in state laws. He will then have to go to the time and expense of a new design to meet the requirements of the second state.

I realize that we cannot expect the states to delay too long in enacting laws for the protection of their own people. Many states already have laws on their books which are quite extensive—others have enabling legislation and are only awaiting standards by which they can go ahead. I can only urge that for the time being the state laws be kept flexible and that the states cooperate to the fullest extent with the sectional committees under the supervision of the Standards Board in their efforts to produce standards acceptable to all.

Now, lastly, as to municipal or local governments, we



Container being lowered *into position at the Sodium Reactor Experiment site will house the core of the sodium graphite nuclear reactor being built as part of the Atomic Energy Commission's program to develop commercial power from nuclear energy. In the core, nuclear fission will take place to produce 20,000 kilowatts of heat which could be utilized to generate some 7,500 kilowatts of electricity. Atomics International, division of North American Aviation, Inc, is building the reactor in the Santa Susana Mountains 30 miles from Los Angeles. Inset at left shows cavity liner of the core.*

cannot expect all towns and cities in the United States which contemplate nuclear installations to arrive at reasonably uniform laws and regulations regarding site requirements, waste disposal, etc, until there are standards established upon which they can base their local laws. I hope the time will come soon when it will not be necessary for the Atomic Energy Commission to approve every site for a nuclear installation any more than it is necessary for it to approve an x-ray machine in a dentist's office. Established standards upon which state codes can be based should suffice.

In closing, I am going to depart from the standardization aspect and mention a way in which states can cooperate with industry and communities within their borders. If an industrial concern wishes to locate a research reactor in a certain community, the state can be very helpful by explaining to the town fathers just what the installation involves and can allay their fears that the reactor will be a nuclear menace which will pollute the air and nearby waters, endanger the future welfare of their children, and even possibly explode and destroy their town. The town fathers will be very skeptical of the assurances given by company representatives that none of these things will happen, but they will have faith and believe the state authorities.

In Canada, this kind of cooperation is accomplished by making provincial and local personnel temporary members of the Reactor Safety Advisory Committee of the Atomic Energy Control Board for projects in their communities. This approach meets the educational aspects and tremendously simplifies obtaining approval at provincial and local levels for construction and operating permits.

Just this kind of action was taken by New York State authorities in assisting the Nuclear Development Corporation to install nuclear facilities in the towns of Pawling and Beekman. The result was that not only were all fears allayed but the industry was greeted with enthusiasm and pride as being a source of revenue and a means of bringing the towns into a modern world.

Quality Requirements for Steel Valves for NUCLEAR POWER PLANTS

by **J. J. Kanter**

QUALITY requirements for the steel valves currently secured for nuclear power plants range from standards generally recognized in power piping practice to those presenting a real challenge to the industry. This range is dependent upon numerous considerations which differ with each reactor concept employed, and the attendant hazards or consequences of malfunctioning of piping components. In short, there are no valve standards which can be considered unique and adequate to this field.

Engineers who design nuclear plants are becoming mindful of the challenge to keep requirements within bounds, this making possible the production of equipment components which can be economically produced.

Toward this end there has recently been much study and discussion of the specifications under which the valves are procured.

It is apparent that much of the expense which is currently being built into these valves is dictated by caution and a lack of experience with the operation of the devices to be controlled by these valves.

As experience is gained and more practical systems emerge, the production of nuclear piping will become a more familiar field. It follows that piping components utilizing less critical materials, and designs lending themselves to economical production, will emerge.

Crane Co.

This main coolant valve *will be installed in an atomic energy plant now under construction. Taking no chances, designers emphasize safety. Experience may show present designs to be unnecessarily expensive.*

It is beyond the scope of this paper to dwell in detail upon the numerous problems of quality requirements which are currently confounding valve manufacturers. These problems are generally most acute where "primary loop" valves are involved. Where valves controlling the flow of a primary fluid are concerned, special attention is given to all the possibilities of failures or malfunctioning which might result either in the spreading of radio-

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Mr Kanter is Directing Engineer, Research and Development Department, Crane Company, Chicago, Ill. He is chairman of ASA Sectional Committee B36, Dimensions and Material of Wrought Iron and Wrought Steel Pipe and Tubing, and represents the Manufacturers Standardization Society of the Valve and Fittings Industry on Sectional Committee B31, Code for Pressure Piping.

This paper was presented during the 1957 Nuclear Congress in Philadelphia, at the session March 12.

Crane Co.

Surface defects *on these huge valves are located by the magnetic particle test, then removed and weld-repaired.*

▶ ASTM Standard E 125-56 T, referred to by Mr Kanter, has an interesting history. The need for a standard reference for use in inspecting castings by means of the magnetic particle method was first suggested by the Oil Refinery Piping Section of Sectional Committee B31 on the Code for Pressure Piping. As a result of experience with magnetic particle inspection of piping components, this group recommended that a standard method of evaluating defects be included in the Code. A special committee, made up of representatives of the Steel Founders Society of America (manufacturers of the castings), the Manufacturers Standardization Society of the Valve and Fittings Industry (users of castings in their products for sale), and the B31 Oil Refinery Piping Section (users of the product) decided on a plan of action. Over a period of 2 years, members of the Steel Founders Society made photographs of magnetic particle indications

active fluid or the loss of liquid cover of the fuel elements in the case of shutdown or reactor scram.

The fluids to be contained (depending upon the reactor system, each with its own set of peculiar problems) include pressurized demineralized light or heavy water, wet saturated steam, liquid sodium or alloys of sodium-potassium, acid solutions of fissile materials, liquid phenolics, or even molten bismuth or sodium containing fissile materials and fission products.

The problem of sealing valve stems against leakage is pre-eminent in the consideration it has received in the design and specification of primary loop valves. Systems for safeguarding against stem leakage to ambient utilize special provisions beyond ordinary packing glands, i.e., bellows, canopies, labyrinths of sealing rings, or even frozen seals of the fluid itself (such as sodium). Where canopies are used, it is necessary to contrive such remote operating mechanisms as hydraulic cylinders or magnetic controls.

Since bellows operation depends upon the elastic range of the bellows materials, where there are many cycles of operation at elevated temperatures, their range of movement must be restricted. An inordinate size of this component results. Since satisfactory packing rings are generally of organic materials, cooling provisions on the packing gland where fluid temperatures are excessive must be incorporated in the designs.

For each type of reactor, the primary loop piping presents a different corrosion problem. In water-cooled reactors, the reactor radiation provides a constant source of dissolved oxygen. The oxygen, along with decomposition products, are factors in steel corrosion. Since reactor piping must provide for long operation, the accumulation of corrosion products carried from piping to reactor is intolerable. Thus, pipe and valves must be of corrosion-resistant materials.

In liquid sodium heat transfer, there also exists a problem of attack upon the steel, and the nickel-chromium austenitic steels are deemed necessary to resist it. Where liquid bismuth is the medium, there are mass transfer considerations. Here chromium-molybdenum ferritic steels have given the most favorable performance to date. Perhaps the most extreme piping corrosion found is in the aqueous homogeneous systems where highly resistant lining materials are sought. The organic material reactors using phenolic liquids do not present a special corrosion problem in the piping. Apparently, carbon steel is a satisfactory material for this system.

Corrosion resistance of piping in water-cooled reactors is receiving a great deal of study, since what it requires to combat it is an important factor in the economics of reactor construction. From the standpoint of minimizing corrosive attack, the austenitic nickel chromium types 347, 304, and 316 are being used.

Since welded construction is a must in reactor piping, the basis of discrimination between these types rests in a large measure upon their welding characteristics. Though type 347 is preferred for some installations because of its stability against inter-granular attack, it presents welding difficulties which are encountered in a lesser degree with type 304. But type 304 is more susceptible to inter-granular corrosion unless carefully solution heat treated, hence its application presents a host of other considerations. Type 316, which is better stabilized than type 304 and presents less difficulty in welding than type 347, constitutes a "middle of the road" choice and is being favored in some installations.

discovered in castings during production. A wide range of indications was photographed. From the many pictures prepared by the Steel Founders Society, the special committee selected 47, showing a variety of indications, progressively severe, for use as the standard reference. These 47 photographs were submitted to ASTM Committee E7 on Radiographic Testing for consideration as an ASTM standard. Committee E7 prepared the text of the standard that has now been approved by the American Society for Testing Materials and published as ASTM E 125-56 T.

This ASTM standard is now available to the B31 Oil Refinery Piping Section for use in the extensive revision of Section 3 of the Code for Pressure Piping that is now being prepared. The group plans to include paragraphs in the revised edition recommending how ASTM E 125-56 T should be used in connection with Section 3 of the Code.

Prototypes of reactors using carbon steel components in the primary loop system are under study. Presumably, some basis for use of ferritic steel, ranging from plain carbon to the various chromium-molybdenum types, eventually will be found.

The body, bonnet, and disc components of primary loop valves must be parts of high integrity. The valves in that part of the system isolate the reactor and retain its fluid cover. Any failure of these parts due to cracks or porosity could have serious consequences. Because of this critical function, much attention has been given by reactor plant designers to the various fabrication alternatives available in the manufacture of these valve parts. Each alternative has a place. No single technique of valve manufacture is universally to be advocated for all situations, whether it be forging, casting, or weld fabrication.

Where large valves are required, steel castings are perhaps the most economical choice and are widely and successfully used. Although forgings have been secured (at considerable expense) for large valves in certain of the more critical and exacting installations, reactor designers are agreed that steel castings have proven satisfactory and oftimes even superior.

Apprehension over the integrity of steel valve components seems to stem principally from the possible damaging influence of thermal cycling and thermal shock. The seriousness of such effect again is not uniformly pertinent to all types of reactor systems, since these are functions of the degree and velocity of temperature change as well as the thermal properties of the fluids contained. For instance, the thermal shock concern in liquid sodium systems is greater than with water systems.

The materials of construction are important where thermal shock is a factor. High thermal expansivity and low thermal conductivity can aggravate the transient stress which attains during these periods of temperature change. Any kind of "stress-raiser" in a metal section may be suspect as a source of eventual deterioration of a component that is subjected to frequent thermal cycling as may be the case in primary loop piping. Hence forgings containing flakes, castings with hot tears, heat-affected weld zones with micro-fissures, weldments with incomplete penetration, as well as design with sharp changes in section or other sources of stress concentration, are all suspect in this type of service.

It is generally agreed that well made steel castings are quite as acceptable for primary loop applications as are forgings, although there is some apprehension over the porosity inherent to steel casting. Admiral Rickover states "Many stainless steel castings for valve bodies have been porous—in fact, it is very difficult to obtain sound castings consistently. We have become reconciled to having extra parts made in order to be certain of obtaining sufficient good ones. And we still have not learned why the difficulties arise and how sound parts can be assured." While Rickover makes this statement with specific reference to castings, his paper cites a number of the shortcomings of forgings. It in no wise can be taken as an indictment of the potentialities of steel founding in yielding products acceptable for critical services.

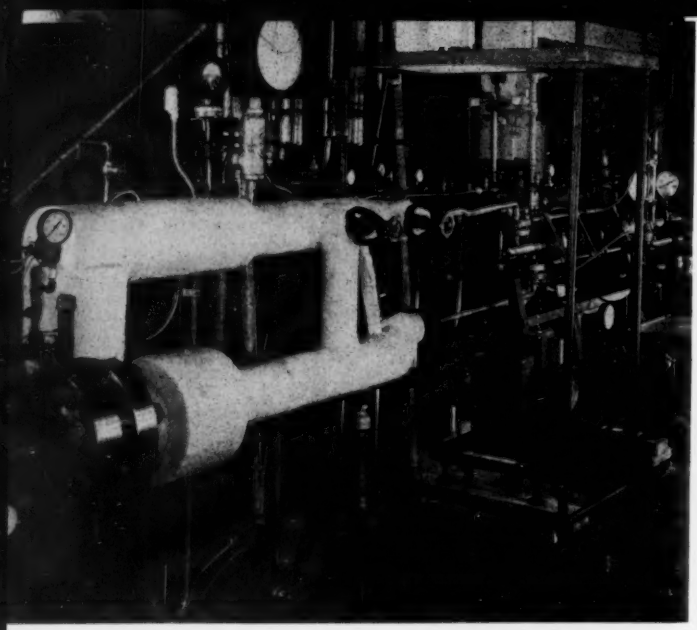
Good inspection on the castings—x-rays, gamma rays, magnetic particle inspection, fluorescent oils, dye stains, or ultrasonics—each in its proper application, can determine undesirable discontinuities, voids, or inclusions. Once located, it is then a matter of engineering judgment to decide whether the indication warrants removal and weld repair.

Weld repair has become an accepted procedure in the fabrication of steel castings for many exacting services, and it should not dismay the designer of nuclear power piping. Its use in preparing any component for critical service is dictated by the nature of the phenomena whereby metals become solids upon cooling. This is true whether the product be an ingot for conversion to a forging or a shaped casting intended for a valve body.

In the case of the valve, the foundryman is confronted by certain limitations in the uniform feeding of adjoining sections of varying size. By skillful risering, gating, and pouring technique, casting defects may be either minimized at unobjectionable locations or held to a size practicable for weld repair.

The surface of valve parts for many of the loops is a special requirement. Rough forged or "as cast" surface must be removed by machining, grinding, or filing both inside and out. A common requirement is 124 RMS finish, a painstaking one when applied to the inside surface of some of the parts. The purpose of 124 RMS is two-fold: (1) To reveal small defects which might otherwise be undisclosed by dye penetrant or other inspection means; (2) To eliminate surface irregularities which might accumulate contaminants.

These finishes are particularly required on stainless steel parts, on which machining costs are high. Hence the



High-pressure *and high-temperature water test loop is used for studying performance of atomic energy valve components.*

cost of repairs on minor defects to meet this requirement is considerable.

Heat treatment of valve parts for primary loops requires special consideration, particularly in the case of the austenitic nickel-chromium steel castings. Unlike the ferritic carbon and low alloy steel castings, heat treatment does not confer grain refinement. The columnar-type crystals of the "as-cast" structure of massive sections persist through heat treatments, and can only be refined by forging or some other kind of permanent deformation process.

The high-temperature solution heat treatment (1950 to 2100 degrees F followed by rapid cool) given these castings to render them stable against intergranular corrosion (particularly pertinent in the case of Type 304) further softens the coarse-grained structure. Since the material then has a low yield strength, some difficulty may be encountered in realizing the strength properties when designing piping structures. This is particularly true where heavy sections are involved. Major repair welds must necessarily be completed prior to machining of castings. Any defects which might show up after completion of finishing operations, necessitating major repairs in the nature of a resolution heat-treatment, would be costly. It follows that the importance of the inspection means applied to rough castings (capable of revealing all defects which might appear on inspection of finished parts) is of considerable importance in manufacture.

Pickling in acid may be a requirement of stainless parts for the cleaning of surface and passivation against corrosion, or even for removal of oxide formed in heat treatment. When surfaces have been finished by shot blasting, pickling may introduce another inspection problem. Dye penetrant checking after pickling may reveal defects not detectable on the freshly shot-blasted surface. Shot blasting peens shut small discontinuities of the surface which are re-opened through metal removal by the pickling treatment. Thus, considerable attention must be given to the technique where surfaces are finished for inspection prior to final cleaning.

Radiographic techniques for the inspection of parts entering nuclear piping are of vital importance. Gamma radiography, done largely with Cobalt 60, is a convenient technique and satisfactory for most sections of valve parts. More massive sections may require high-voltage x-ray or even Betatron radiography. For good resolution of defect images, the source of radiation must be quite compact.

Gamma ray "pills" have an advantage in that they may be placed inside the valve body section, with the photographic film on the outside. Simplicities of interpretation of such a radiograph may in some cases outweigh the advantages of x-rays or Betatron where it may be necessary to "shoot" a more complex section. On the other hand, in some situations, limitations on the diameter-to-thickness ratio (important in avoiding distortions of image) for gamma-graphs argue for the use of x-rays.

Radiographic requirements are usually in terms of the ASTM radiographic standards. Resolution is judged by showing a two-percent penetrameter on the film. The ASTM standards define various degrees of indications by classes. A Class I indication by these standards, representing a proportion of the section not much greater than revealed at the limit of penetrameter sensitivity as an interior discontinuity (i.e., a tear or sand inclusion), is admissible without repair in all current specifications.

Some difference of opinion exists as to whether the larger Class II indications should be admissible. When Class II indications can be shown to be confined to the deep interior or low stressed areas, they are considered acceptable for most purposes. The expense and difficulty of reworking parts for acceptance to Class I requirements has come up for much recent discussion. The merits of the requirements must be judged by the criticality of the particular application.

A characteristic of cast metal sections is the so-called centerline separation, where columnar crystals solidifying from both sides of a wall section meet. The last metal to solidify is trapped between the two systems of solidifying crystals along with material swept along or rejected by the crystals. This is the mechanism for the centerline separation, which may show up in radiography as voids and inclusions. To reduce centerline separation to less than Class I requirements (or even Class II) by foundry technique is impractical, if not impossible. Thus, Class I and II requirements necessitate repair of castings by the very nature of the casting process.

The term "centerline" is not to be taken literally, because thermal conditions attending the solidification of a casting will not always place the end of solidification at the "center" of a given section.

It is contended by some users that steel castings should

not be repaired to a depth greater than 50 percent of the section. Apprehension over the quality of weld repairs more extensive than half of the section is on the grounds that either the weldment may not match the parent composition, or that heat treatment or welding technique may fail to establish matching physical properties between the repair and parent material. Further reasons are that micro-fissures in the heat-affected zones surrounding the weldment may contain fissures.

These are all possible causes where a weldment might conceivably become detached from the casting under severe thermal cycling service. Assurance is sought in the requirement that at least half the original metal section remain intact. Many foundrymen contend that the "50 percent rule" is impractical since it is not possible to control the locus of the interior separation of a casting—or at least without many costly trials for each type of casting which such a rule may cover. If the separation is on the inside of a section, accessible only from the outside, repair of inspection indications obviously cannot comply with the rule.

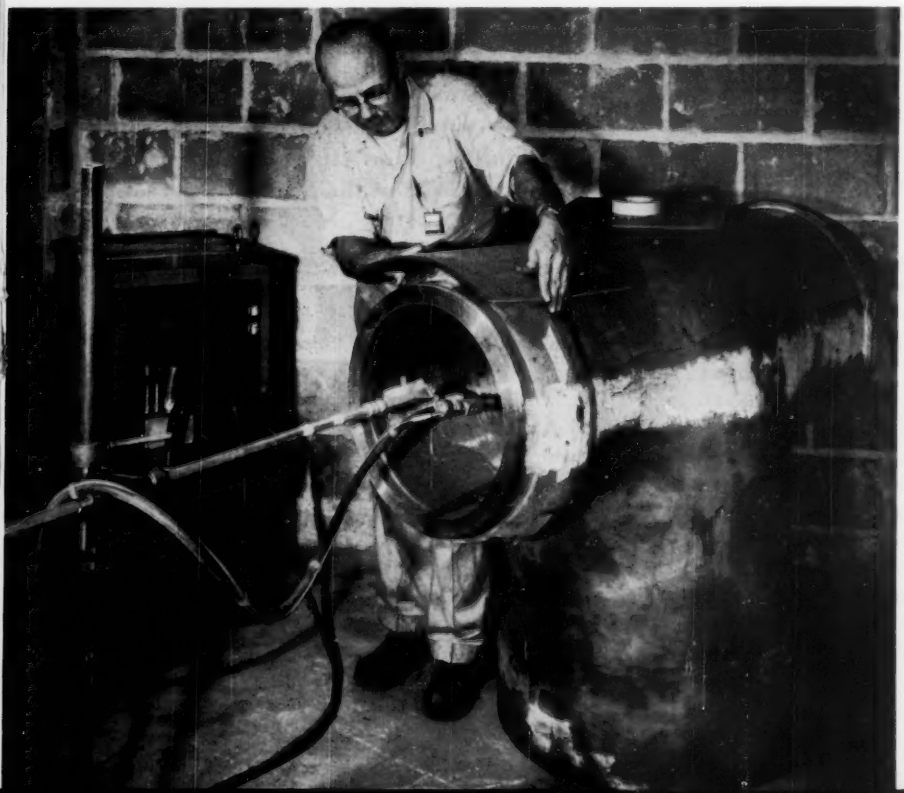
On ferritic steel parts, both forged and cast, magnetic particle inspection is useful in picking up linear discontinuities on or near the surface. This method has been widely used on valve parts of high quality requirements for a number of years. Procedures for its use have been established by the ASTM. A set of reference photographs of magnetic particle indications has recently been adopted by ASTM (ASTM E 125-56T) as a standard analogous to the well-known standard for radiographic defects. These photographs show the range of indication to be found on cast steel sections by standardized technique. The indications are keyed to degrees of severity of the discontinuity. Codes for inspection and repair are being developed in terms of it.

Some use has been made of ultrasonic inspection of valve parts, but on the whole this technique has not reached a satisfactory state of development as applied to the forms involved and the complications of interpretation entailed. Where coarse-grained metal structures are tested, as in the case of austenitic stainless steel castings, confusing patterns (due to the coarseness of these grains) render reliable pin-pointing of small defects impractical.

Meeting the somewhat rigid quality requirements of valves and fittings for service in nuclear power plants is a task with which the valve industry wrestles with all the means available. The various testing facilities pertinent to the manufacture of valves of the quality needed for nuclear plant service are available.

The valve industry feels quite able to accede to all reasonable requirements, even to using hot loop tests for production verification of valve performance.

The valve industry realizes the importance of its product in the economics of atomic power, and is eager to produce the quality needed to insure safe and dependable operation of nuclear power plants. In 1956, the capacity of the U. S. valve industry as a whole, measured in dollar output, exceeded 1¼ billions. Projections of the demand which the industry might have to meet for nuclear plant valves and fittings, as published by an Atomic Industrial Forum survey, show an annual total of $25 million for 1960, rising to $90 million by 1963. These demands the rather sizeable valve industry should be able to meet.



The radiographic method *of inspection is being used on this large steel valve casting. Cobalt 60 is the source of radiation.*

Recent Changes in Standard for Automatic Control Equipment

by **H. Bany**

Mr Bany is chairman of the AIEE Automatic and Supervisory Control Subcommittee that prepared American Standard C37.2-1956. He is consulting engineer in the Medium Voltage Switchgear Department, General Electric Company, Philadelphia, Pa. Sponsor of the C37 committee is ASA's Electrical Standards Board.

MUCH new material has been made available in the recent revision of the American Standard on Automatic Station Control, Supervisory, and Associated Telemetering Equipments, now ASA C37.2-1956. New definitions, changes in the device function numbers, and a new section on representation of device contacts on elementary diagrams are expected to add to the usefulness of the standard.

This standard is used principally for electrical equipment in electric power substations and generating stations. As indicated in the title, it specifically applies to (1) automatic and partial automatic installations, (2) supervisory control, indication, and telemeter selection, equipments, and (3) associated telemetering equipment.

The term "associated" in the title indicates the fact that the standard applies only to those telemetering equipments associated with supervisory systems in electric power substations and generating stations and not to the mobile or other special types.

The revision of the 1945 edition was prepared by the Automatic and Supervisory Control Subcommittee of the American Institute of Electrical Engineers' Committee on Substations. The technical content was approved by the nationally representative Sectional Committee on Power Switchgear, C37, organized under the procedures of the American Standards Association, which recommended its approval by ASA. The standard was approved as American Standard on October 16, 1956.

Among the important changes is the addition of many more definitions, increasing the total number from 21 to 55. They are now grouped under five major headings: Control and indication; automatic station equipment; feeders and resistors; supervisory equipment; telemetering equipment. Most of these additional definitions are completely new in that they have not yet appeared in any other standard. Greater uniformity in use of automatic station and supervisory equipment terms is expected as a result of the new and revised standard definitions.

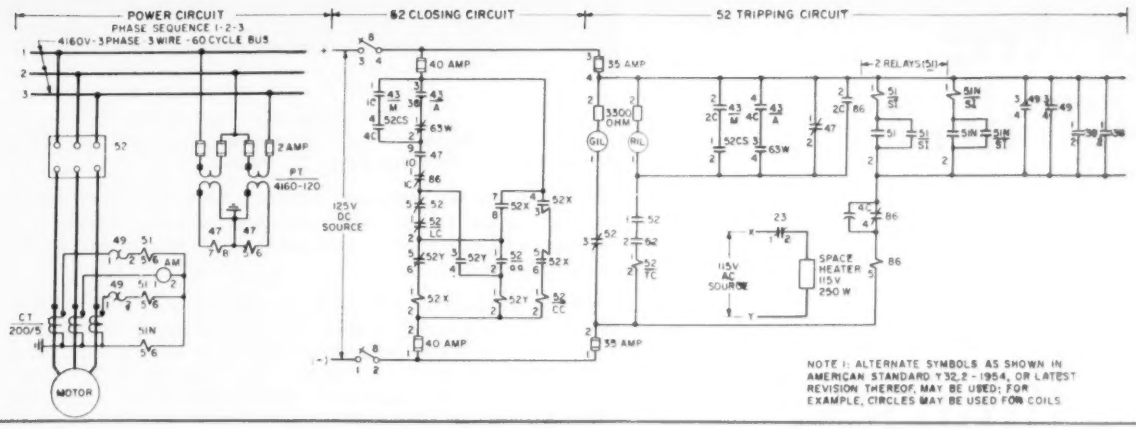
In addition to the fact that the new edition provides up-to-date material for use by power substations and generating stations, some of the changes are useful to other branches of the electrical industry as well.

The device function numbering scheme, which has been brought up to date and made further applicable to electrical equipment in other fields, is already being extended by the American Institute of Electrical Engineers' Committee on Petroleum Industry to pipeline pump stations under automatic and remote control. The device function numbering scheme, which is a standard language of numbers for identifying on drawings and on the devices themselves the many different devices making up the complete equipment, was first devised over 40 years ago for automatic stations. It is also ap-

Copies of American Standard C37.2-1956 can be obtained from the American Standards Association at $1.30. Send check with your order to avoid handling charge.

The Automatic and Supervisory Control Subcommittee of the AIEE Committee on Substations consisted of the following personnel:

H. Bany, General Electric Company, Philadelphia, Pa., Chairman; C. E. Bauman, Harza Engineering Company, Chicago, Ill.; J. F. Bracken, Commonwealth Edison Company, Chicago, Ill.; H. W. Buss, Rochester Gas and Electric Corp., Rochester, N. Y.; A. N. Aliasen, Sargent and Lundy Engineers, Chicago, Ill.; G. E. Farmer, Tennessee Valley Authority, Signal Mountain, Tenn.; W. M. Larson, Control Corporation, Minneapolis, Minn.; M. E. Reagan, Westinghouse Electric Corp., East Pittsburgh, Pa.; J. W. Savage, Westinghouse Electric Corp., Los Angeles, Calif.; M. S. Schneider, Cincinnati Gas & Electric Co., Cincinnati, Ohio; J. J. Winsness, General Electric Company, Philadelphia, Pa.



This is the typical elementary diagram *included in American Standard C37.2-1956 to show the recommended methods of representing contacts of devices.*

plicable and is now widely used in manually controlled installations. It provides a means of quickly grasping the main purpose of any device used as part of electrical equipment. The system is based on the assignment of a standard number, with suffix letters where required, to each of the functions performed by the component elements or devices in an equipment. The scheme has, therefore, been quite generally used for many years for switchgear assemblies and associated apparatus, such as motors for power utilization purposes, in all types of automatic, partial automatic, and manually controlled installations.

A general description of each function has been added, which was not present heretofore, and some changes have been made in the function names and numbers. In part, this represents changes in the art during the past ten years. It has been possible to increase the usage of many of the device functions by means of additional appropriate suffix letters. The number of these letter combinations has been more than doubled over those in the previous edition of the standard. These suffix letters have been classified in several groups to denote the following:

1. Separate auxiliary devices,
2. The condition or electrical quantity to which the device responds, or the medium in which it is located,
3. The location of the main device in the circuit, or the type of circuit in which the device is used or the type of circuit or apparatus with which it is associated,
4. Part of the main device,
5. Any distinguishing features or characteristics or conditions not specifically described in 1 to 4 above.

The 100 and 300 series of numbers formerly used with feeder equipments have been omitted, since the same type of identification for feeder equipments can be obtained by suffix letters where desired. Only the 200 series of numbers used with supervisory equipments has been retained.

A new section on Representation of Device Contacts on Electrical Diagrams can be used to help bring about greater uniformity in representing device contacts in diagrams and other published material in all fields of electricity.

It has been common drafting practice to show the contacts of all electrically operated devices in the de-energized or non-operated position. However, in the case of relays or devices that operate in response to other than electrical quantities, there has been a lack of consistency in the representation of their contacts. The same was true of the contacts of other devices, such as those which have no de-energized or non-operated position.

In the case of a relay which is responsive to temperature, rising temperature is now considered to be the energizing influence, and the contacts of a temperature relay are shown in the position they assume at the lowest possible temperature. In the case of devices which are responsive to liquid level or flow, or speed, or vibration, or pressure, the energized influences are now considered to be, respectively, the rising level, increasing flow, etc, so that the contacts of these devices are all shown in the position they assume when the quantities to which they respond are at their lowest value.

The method of representing contacts of devices such as manually operated transfer or control switches, which have no de-energized or non-operated position, is to show them in the open position, with sufficient identification at the contacts to indicate when they close. The method of representing other types of contacts, such as limit switches, latch-checking switches on circuit breaker mechanism, and on special types of devices, such as electrically operated latched-in relays or contactors, is also indicated. A typical elementary diagram is now included in the standard to illustrate the recommended methods of contact representation.

Are These Cases Work Injuries?

Rulings of the Committee on Interpretations are now being issued on whether unusual industrial injury cases are to be counted as "work injuries" under the revised edition of American Standard Method of Recording and Measuring Work-Injury Experience, Z16.1-1954. Sponsors of ASA Sectional Committee Z16 are the National Safety Council and the Accident Prevention Department of the Association of Casualty and Surety Companies.

Case numbers in the new series start with 400. The cases below represent the ninth installment in the series under the revised edition of the standard. The numbers in parentheses refer to those paragraphs in the standard to which the cases most closely apply.

Cases 400-500 are being reprinted with an index prepared by the National Safety Council. To make it easy to locate all cases applying to any section of the standard, the index is arranged both numerically by paragraph number of the standard and numerically by case number. Each index reference includes a brief description of the case. Reprints are 75 cents per copy, available from ASA. Liberal discounts are offered for quantity orders.

CASE 501 (5.2)

A records clerk lifted a file drawer from the cart, and twisted his body when placing the drawer in the file cabinet. Four days previously he had twisted his back while bowling. The employee was performing his regular duties when the injury occurred; the employee, his supervisor, and the plant nurse concurred that the lifting process did not aggravate the previous back condition. The company doctor believed that the first injury was the cause of the resulting back ache, and was not aggravated by the lifting of the file drawer.

Decision: This injury should not be included in the work injury rates. The committee concluded that since the doctor did not believe the incident could have aggravated the employee's previous back condition, the requirements of paragraph 5.2(b) were not satisfied.

CASE 502 A1.6(1)

An employee stepped on a rock as he was getting out of a car to report for work, aggravating an already sore spot where a corn had been removed from the ball of his foot. The accident occurred on company property in an area allocated for parking company vehicles but not set up as a separate parking lot for employees.

Decision: This injury should be included in the work injury rates. The committee concluded that the parking area did not meet the requirements of a parking lot as contemplated in paragraph A1.6(1) of the standard.

CASE 503 (5.2)

An employee was engaged in unloading 3-inch pipe along the route of a new gas main. Two other employees were assisting in this work which had been performed many times by all three of them. The employee in question was using a pick handle to straighten the pipe after it had been rolled off the truck and onto the ground. In this particular case he stooped over and moved one end of the pipe. As he straightened up he felt a pain in his back. Two days later he was sent to the doctor who reported that the employee had a congenital abnormality with an incomplete lumbarized sacral segment and pseudoarthrosis between the transverse processes in the sacrum, thus accounting for an unstable back. The doctor believed the employee had had a pre-existing anomylous condition in his back which made it weak and susceptible to strain, and that it was possible that his condition was aggravated while he was moving the pipe.

Decision: This injury should not be included in the work injury rates. The committee concluded that the injury arose out of the employee's normal regular duties, and did not meet the requirements of paragraph 5.2.

CASE 504 (1.2.4)

An employee on a field party of the geological department in an outlying area suffered a minor injury when he tripped and fell while walking along a trace through the jungle. Although the injury appeared minor, the party chief sent the worker to the nearest physician for examination and medical attention. The physician was located several days' distance away, and the employee thus lost time from work traveling to the doctor.

Decision: This injury should be included in the work injury rates. The committee concluded that the time lost was due to an injury which arose out of and in the course of employment.

CASE 505 (1.2.4)

An employee had been sprayed in the face with caustic soda. Examination revealed injection of both conjunctivial sacs with tissue shredding apparent on the left, and the left corneal surface appearing cloudy. The employee was treated and hospitalized the remainder of the day.

The next day he was discharged by the doctor who stated that the employee could return to work in a few days. However, the doctor also said that the employee could return to work immediately if it were possible to place him under conditions such that there would be no undue exposure to possible trauma, foreign bodies, or excessive light.

A normally filled position meeting the requirements for the injured's placement was found. However, because the employee returned to work in street clothes, mentally unprepared to return at that time; because the employee relations department felt that returning an employee to work so quickly following a severe eye injury might have a poor morale effect; and because the employee's supervisor was hesitant to place him in the available assignment, he did not return to the other job, and therefore lost time from work.

Decision: This injury should be included in the work injury rates. The committee concluded that the company's refusal to make the job open and available to this employee made the injury reportable under the standard.

CASE 506 (5.14)

A cranefollower was picking up a block of wood with a fellow worker, and pinched his right ring finger between two blocks. He was treated at the dispensary where the diagnosis revealed a contused finger. A few days later the employee was diagnosed as having dermatitis, and was referred to a dermatologist who stated that the dermatitis was due to one of the medications used in the treatment

of the finger. The employee lost one day from work due to the dermatitis.

Decision: This injury should not be included in the work injury rates. The committee concluded that the employee had been given standard medical treatment and there was no indication of improper treatment. His allergic reaction, therefore, came under paragraph 5.14 of the standard.

CASE 507 (5.2)

A rotary floorman, a member of a rotary drilling crew, was assisted by a fellow worker. Drill pipe was pulled from the hole in stands consisting of three 30-foot lengths of pipe, and was racked by standing it in a vertical position on the derrick floor. The employee in question pushed a stand consisting of three lengths of drill collars to a position to be racked. During the process of pushing the stand of drill collars to be racked, the employee was using his left shoulder against the stand and the other employee was pushing with his hands. Just before the stand reached the racking position the employee in question felt it dip back to him as if it had hit something in the derrick, or else the derrickman had pulled on the top of the drill collar, and at the same time the employee felt a burning pain in his lower back.

The operation was being done in a normal, approved method. The derrickman stated that at no time during the trip did the drill collars strike anything in the derrick, and the injured employee did not slip, trip, or fall.

Decision: This injury should be included in the work injury rates. The committee concluded that this disabling injury met the requirements of paragraph 5.2(a) of the standard.

CASE 508 (5.2)

An employee was in the act of moving a portable meter weighing approximately 45 pounds. He picked up the meter and lifted it upright in an approved manner, and as he did so he felt a sharp pain in the small of his back as he reached an upright position. He did not slip, trip, or fall.

Decision: This injury should not be included in the work injury rates. The committee did not believe it was in a position to determine whether lifting a meter weighing 45 pounds was or was not overexertion, but the members did not believe that the facts presented met the requirements of paragraph 5.2(a).

CASE 509 (5.2)

A surveyor on a seismograph party was wading through deep mud while pulling a water survey cable, and aggravated a condition of his back which had first occurred the day previous while he was pulling on a rope to secure a barge. At no time did he slip, trip, or fall.

Decision: This injury should be included in the work injury rates. The committee believed that the activity in which the employee was engaged at the time of the onset of symptoms was such as to constitute overexertion, or at least to take it out of the class of normal, regular duties.

CASE 510 (5.2)

An employee took his notebook out of his pocket and laid it on the top handrail of a tank walkway, approximately 2 feet high, for the purpose of writing down the tank gage measurement. As he finished writing and stood erect, a pain developed in the lower part of his back.

Decision: This injury should not be included in the work injury rates on the basis that there was no indication of any event associated with the injury which would meet the requirements of paragraph 5.2(a).

CASE 511 (5.2)

An employee was helping clean a boiler. He first cleaned the loose scale from the bottom of the boiler water jacket with a cleaning rod. He was preparing to use a piece of ⅝-inch rod approximately 7 feet in length to free dense scale through the right-hand plate under the crown sheet. He was standing in a stooped position, holding the rod approximately 20 inches from the floor when a severe pain caught him in the back. The pain was so acute that the doctor gave him an injection for relief. He did not slip, trip, or fall, nor was he struck by anything, nor did he overexert himself.

The doctor said the employee's condition could have been caused by such things as stepping from the curb or bending to tie his shoes.

Decision: This injury should be included in the work injury rates. The committee concluded that this disabling injury could also have occurred from the stated work conditions as well as from ordinary activities.

CASE 512 (5.18)

A company requested an interpretation of a case where no actual time was lost, but where in the final analysis the company doctor gave an evaluation of 20 percent permanent disability to the back.

Decision: The committee concluded that such a case should be included in the work injury rates as a permanent partial disability with a time charge of 1200 days which was 20 percent of permanent partial disability.

CASE 513 (5.18)

A company requested an opinion concerning the requirement of paragraph 5.18 which called for the decision of the *physician* engaged or authorized by the employer. The company questioned whether a registered nurse's decision could be accepted as a substitute for the decision of the physician when the nurse treated a minor injury without reference to the physician.

Decision: The committee concluded that paragraph 5.18 specified the decision of a "physician" and the members did not believe that the decision of a registered nurse should be accepted in lieu of the physician. Professionally, nurses were not considered qualified to render a medical opinion. A physician, although receiving his pay from the employer, was required by the ethics of his profession to place the well-being of his patient above all other considerations. His decision, therefore, should be strictly professional, based entirely upon what was best for the patient.

CASE 514 (1.2.4)

A cleaning room employee was walking through an area where hot sand was being knocked off a casting to the floor. A wet-water solution was sprinkled on the area as a dust control measure. The employee stepped on one of the accumulated sand heaps, and a jet of hot steam erupted from a pocket beneath the mound, burning his left foot. He suffered a second degree burn, and received treatment at the plant first aid room. Two days later he began a regularly scheduled vacation period. Although this man lost no time prior to his vacation period, his doctor reported that it would have been inadvisable for him to have worked during the vacation period had he been scheduled to work.

Decision: This injury should be included in the work injury rates. The committee concluded that disability which might come while an employee was scheduled to be on vacation would still be disabling until the doctor said the employee was able to return to work at a regularly established job which was open and available to him.

CASE 515 (1.2.4)

A repairman got a foreign body in his right eye, and was unable to finish his shift. He was sent to the doctor for treatment, and was re-treated on the following morning, at which time he was given a release to return to work. However, although this was an off day, according to the labor contract, if it had been a regular scheduled shift for this employee, he would still not have been allowed to work because he was unable to report at the beginning of his shift.

Decision: This injury should not be included in the work injury rates. The committee concluded that this should be considered as a medical treatment case rather than as a temporary total disability, and the members did not believe that the question of the labor contract should enter into the decision.

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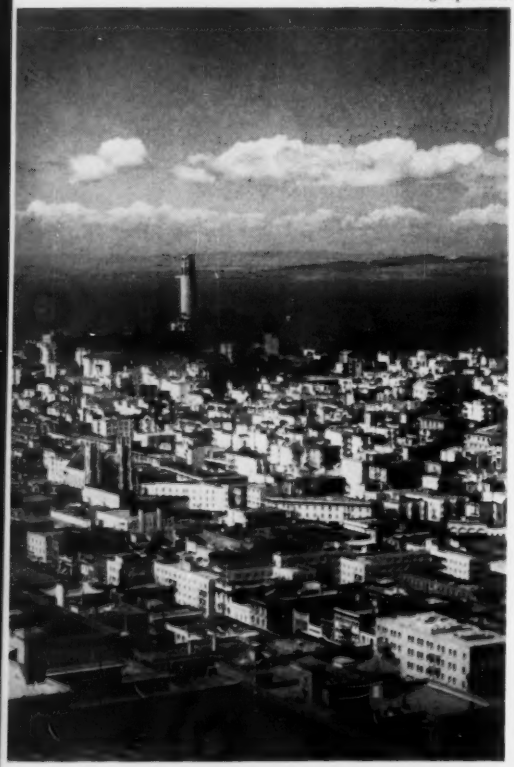
National Conference on Standards in San Francisco November 13-15

Telegraph Hill



THIS year, for the first time, the National Conference on Standards is being held on the West Coast. A program loaded with facts and ideas in support of the theme "Standards — Key to Progress and Profits" offers standards men three days crammed with material they will take home for use in their own organizations.

The Conference is being held at the St Francis Hotel, San Francisco, November 13-15.

The program includes sessions on government and industry use of national standards, nuclear energy and radiation exposure, organizing standards in a company, purchasing, electronics, motion pictures and television, and technical communications.

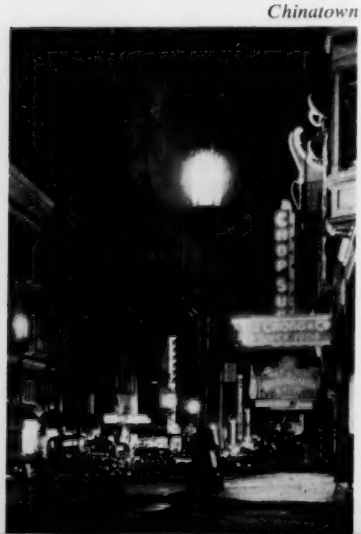
The thirty-ninth annual meeting of the American Standards Association opens the Conference on Wednesday morning, November 13. At this session, the fundamentals of ASA will be presented and methods and accomplishments discussed.

Concurrent sessions on government standards and on safety are features of Wednesday afternoon. The session on government and industry use of national standards brings together as sponsors the Department of Defense, the General Services Administration, and the National Bureau of Standards. The experience of the American Society of Safety Engineers and the National Safety Council, joint sponsors, highlights the session on Safety, where problems of radiation exposure will be discussed.

Thursday, November 14, offers as an outstanding feature the all-day annual meeting of the Company Member Conference. In the morning, the National Association of Purchasing Agents joins the CMC in sponsoring a session on "Standardization Through More Effective Buying." The CMC and the Standards Engineers Society present "Stand-

Nob Hill

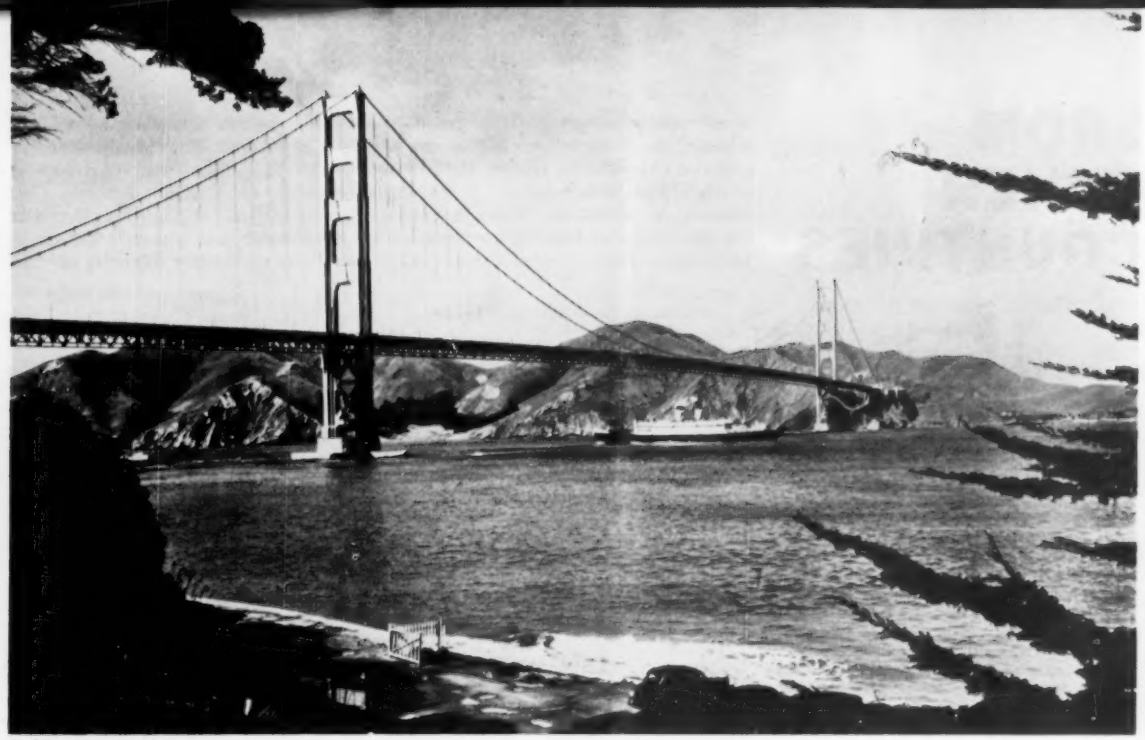
Chinatown



FOR THE LADIES

A trip to San Francisco of necessity means fun as well as work. For your wife—she will certainly want to go with you—ASA has arranged a special program of shopping and sightseeing, interesting but not too crowded, leaving time for personal sightseeing, shopping, and browsing in addition to the planned activities.

On a bus tour of the city, Wednesday, November 15, the ladies will



Golden Gate Bridge

ardization in Your Company" in a joint session Thursday afternoon.

Also on Thursday morning, the American Society for Testing Materials has selected "Cost Improvement Through Standardization" as the theme of the ASTM-sponsored session.

On Thursday afternoon, the Association of American Railroads has taken responsibility for a session in which the railroads' need for and use of standards will be discussed.

The Howard Coonley Medal and the Standards Medal for 1957 will be presented at the Awards Dinner Thursday evening.

On Friday morning, the American Ordnance Association sponsors a session on "Standardization as an Effective Tool in Fostering Industrial Preparedness (especially along electronic lines in this atomic age)."

Standardization as an aid in technical communication is being discussed at a Friday afternoon session sponsored by the Technical Publishing Society.

The Motion Picture Research Council and the Society of Motion Picture and Television Engineers will offer a program on standards in cinematography, which will include a demonstration by SMPTE of projector films used to insure optimum presentation of motion pictures.

Data to help you plan your trip to the National Conference on Standards and San Francisco—

Registration, three days (includes Awards Dinner and copy of Proceedings)	$21.00
One day or part of day	7.00
Awards Dinner	7.50
Ladies program (package for sightseeing and shopping tours, includes breakfast and lunch)	10.00

For further information, write the American Standards Association. Preliminary program and reservation blank will be sent to you later.

see the view from Telegraph Hill, the brilliant murals in Coit Tower, Fisherman's Wharf, San Francisco's world-famous Chinatown, the beautiful Civic Center, famous Market Street, the Mission Dolores, the largest garage in the world built on four underground levels, Nob Hill, and many other sights unique to San Francisco. A cruise on San Francisco Bay, also on Wednesday, will give a close-up of the famous harbor, Golden Gate Bridge, and Treasure Island. The day's entertainment includes a luncheon.

On Thursday, November 14, the ladies will be taken on a conducted shopping tour to inspect the most exclusive and interesting shops in San Francisco. They will meet at a Continental Breakfast in the Mural Room of the St Francis Hotel for a preliminary briefing on the tour.

Friday, November 15, will be entirely free for personal shopping and sightseeing.

Mission Dolores

FROM OTHER COUNTRIES

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. Titles are given here in English, but documents are in the language of the country from which they were received. An asterisk * indicates that the standard is available in English as well. For the convenience of readers, the standards are listed under their general UDC classifications. In ordering copies of standards, please refer to the number following the title.

53 PHYSICS AND MECHANICS

Germany (DNA)

Basic Units. Symbols. Terminology. Definitions DIN 1301

United Kingdom (BSI)

Dial test indicators (lever type) for linear measurement BS 2795:1957

542 EXPERIMENTAL CHEMISTRY

Germany (DNA)

Elbows with ground glass connectors DIN 12258
Liebig condensers DIN 12576
Condensers with bulb condensing tubes DIN 12581
Burette for chlorine gas DIN 12730
Extraction thimbles DIN 13449

United Kingdom (BSI)

Drawing conventions for laboratory glass apparatus BS 2774:1956
Ubbelohde apparatus for flow and drop points BS 894:1956
Spherical ground glass joints BS 2761:1956

USSR

3 stds for reagents GOST 4168, GOST 7756, 4217-55
Acetic acid, anhydrous GOST 787-55
Ortho-phosphoric acid GOST 6552-55
Laboratory chinaware GOST 861-55
Laboratory glassware of quartz glass GOST 7382-55
Specific gravity bottles GOST 7465-55
Weighing bottles GOST 7148-54
Acid resisting andesite lined laboratory vessels GOST 7311-55
Solvents. Test for tetraethyl lead contents GOST 7978-56
Stopcocks, glass GOST 7995-56

620.1 MATERIALS TESTING

Japan (JISC)

Atmospheric conditions for testing JIS Z 8703

Union of South Africa (SABS)

Code of practice for hardness testing of metallic materials S.A.B.S. 055-1955

United Kingdom (BSI)

Tensile testing of metals BS 18:1956

621.3 ELECTRICAL ENGINEERING

Australia (SAA)

Approval and test specs for air-break switches SAA C.133-1956 Ap.
Approval and test specs for neutral-screened cables SAA C.155-1956 Ap.
Approval and test specs for electric floor-polishers SAA C.157-1956 Ap.

Bulgaria

Battery-operated telephone number selecting apparatus BDS 479-56
Scale of rated current in power installation BDS 2424-56
Asynchronous motors, three-phase, 0.6-100 kw BDS 2167-55
Rotating electric machinery, survey BDS 2168-55
Telephone cabin for interurban service BDS 2287-55
Power transformers, test methods for BDS 2325-56

Canada (CSA)

Section 70, Interim revisions (Dec 1956) to Canadian Electrical Code, Part 1 C22.1-1953
Construction and test of manually-operated general-purpose A-C switches C22.2 111-1956
Single-phase pivot-type transformers types-ons for rural applications C138-1956
Construction and test of flexible non-metallic tubing C22.2 44-1957
Construction and test of thermoplastic-insulated wires and cables C22.2 75-1957
Inherent overheating protective devices for motors C22.2 77-1957
Construction and test of non-metallic sheathed cable C22.2 48-1957
Construction and test of armoured cables C22.2 51-1957
Construction and test of commercial cooking appliances C22.2 109-1957
Spec for fiber conduit C127-1957

Czechoslovakia (CSN)

Rules for designing and building 1500 v and 3000 v dc network for electric railroads CSN 34 1536
Copper wire insulated with synthetic varnish CSN 34 7325
29 stds for different types of insulated wires and cables CSN 34 series 74
3 stds for clamps for overhead bare wire CSN 34 8730/2
Basic std for electric machines CSN 35 0000

France (AFNOR)

Rigid conductors, vulcanized rubber insulated NF C 32-104
Rigid cables, vulcanized rubber insulated NF C 32-120
Flexible conductors, polyvinyle chloride insulated NF C 32-204
Conductors for overhead lines, weather-protected NF C 33-205
Rotating electric machines, nominal power up to 600 watts NF C 51-200

Germany (DNA)

Shoes for brush cables, stamped DIN 46224
Different diagrams for switchgears DIN 43681, Bl.2
Contact rivets, soldering type DIN 46241, Bl.2
Lead-in insulating bushing for high voltage cables 10, 20, 30 kv DIN 47686/8
Different graphical symbols used in electronics DIN 40700, Bl.2
Push-button switch plates DIN 43605
Classification and terminology for safety devices DIN 43681, Bl.1
Thermocouples DIN 43733
Miniature bulbs DIN 49846/8
Lampholder for railroads DIN 43206
X-ray technique, general DIN 6814
Glass thru-bushings DIN 41109
Wiring ferrules, various shapes DIN 41112
Three-pole plug, shielded DIN 41524
Output transformer with step switch DIN 42515
Edison screw threads, dimensions DIN 40400
Transformers, dimensions of, DIN 42520
2 stds of telecommunication: contact rivet, solid, plated, brazed, or welded DIN 46240 Bl.1+2/,-41
Lightning arrester, conductors for, DIN 48801
Ceramic bushing for capacitors DIN 41108
Front photo-cell, dimensions DIN 44022
Loudspeaker cases, dimensions of, DIN 45571

India (ISI)

Test for porcelain insulators for overhead lines (1000 volts and above) IS 731-1956

Israel (SII)

Marking of electrical products SI 206

Japan (JISC)

General rules on instrument transformers JIS 1710 *
Voltage transformers JIS C 1712 *
Combined voltage and current transformers JIS C 1714 *
Designation system for small vacuum tubes JIS C 7001 *
General service fluorescent lamps JIS C 7601 *
Circuit breaker for electric wirings JIS C 8370 *
Three-phase induction motors for general purposes JIS C 4201
Single-phase induction motors for general purposes JIS C 4203
PVC insulated cord JIS C 3306
PVC sheathed cable JIS C 3312
3500 v dredger cable JIS C 3402
Carbon and graphite electrodes JIS R 7201/2

Mexico (DGN)

Concentric copper cable J 28 - 1956

Netherlands (HCNN)

Two-pole plugs and socket-outlets 10 a 250 v for domestic purposes NEN - 1020
Safety rules for electric escalators NEN - 1085
Rules for sequence charts V - 3088

Poland

Telecommunication bare steel wires PN T-90001 - 1955
2 stds for PVC insulated copper wires PN E-90032, -34 - 1955
Insulating materials, determination of dielectic properties PN E-04404
2 stds for bare aluminum and steel-aluminum conductors PN E - 90002/3
PVC insulated wire and cables PN E - 90033
Electric machines, general rules relative to PN E - 06000

Roumania (CSS)

Porcelain insulators for overhead lines STAS 1652-56
3-phase asynchronous motors up to 100 kw, 500 v STAS 1764-56
Conventional telecommunication symbols for drawings STAS 2005-55
Strain insulators, porcelain STAS 3187-56
Porcelain through-bushings up to 35 kw STAS 3538-56

Spain (IRATRA)

Bipolar hot-wire plugs, dimensions UNE 10 029

Union of South Africa (SABS)

Cartridge type fuse-links for low and medium voltage electric fuses S.A.B.S. 172-1955
Immersion type thermostats for electric storage water heaters S.A.B.S. 181-1954

United Kingdom (BSI)

Papers for electrical purposes BS 698:1956
Aluminum conductors for overhead power transmission purposes BS 215: Part 1:1956
Steel-cored aluminum conductors for overhead power transmission purposes BS 215: Part 2:1956
Intrinsically-safe transformers primarily for bell-signalling circuits BS 1538:1956
Plugs for hearing aids BS 2813:1957
Flush-mounted 13-ampere switch socket-outlets BS 2814:1957
Auxiliaries for operation of fluorescent lamps: Part 1, Ballasts; Part 2, Capacitors BS 2818:Parts 1 & 2:1957
Safety requirements for radio or other electronic apparatus for acoustical or visual reproduction (electric-main-supplied) BS 415:1957
Primary cells and batteries for intrinsically safe circuits in coal mines BS 1975:1957
Types of enclosure of electrical apparatus BS 2817:1957
Field rheostats and rheostats for other purposes BS 280:1957
Motor starters and controllers BS 587:1957

USSR

Electromechanical safety time-lag relay GOST 8159-56
Earthing clamp for overhead lines GOST 8178-56
Unified standard telegraph tape GOST 8210-56
Electric asynchronous motors, three-phase, squirrel type, from 10 to 600 w GOST 8212-56
General technical requirements for the installation of household appliances GOST 8223-56
Telephone cable terminal boxes GOST 8108-56
Rubber-insulated copper telephone wires GOST 8133-56
2 stds for testing low-power electronic tubes GOST 8103/4-56
2 stds for testing low-power electronic tubes; electrical testing and testing for cathode current GOST 8089, 8093-1956

621.82 BEARINGS, COUPLINGS, JOURNALS, ETC.

Bulgaria

9 stds for different types of bearings BDS 2381/88 - 56 2410 - 56
Shaft coupling sleeves BDS 2444 - 56

Czechoslovakia (CSN)

80 stds for ball, roller, and needle bearings CSN series 02 35 . . , -36 . . -46 . . , -47.

Japan (JISC)

Steel ball for ball bearings JIS B 1501-1956 *
Cylindrical rollers JIS B 1503-1951 *
Needle roller JIS B 1504-1954 *
2 stds for different types of ball bearings JIS B 1521-,32-1955 *
2 stds for different types of roller bearings JIS B 1533/4-1954 *
Spherical roller bearings JIS B 1535-1955 *
4 stds for inspection method of different types of ball and roller bearings JIS B 1543/5-1954/55 *
Plummer blocks for ball and roller bearings JIS B 1551-1955 *
4 stds for different types of tapered adapters for ball and roller bearings JIS B 1552/5-1955 *
Steel balls for ball bearings JIS B 1501
Thrust ball bearings JIS B 1532
Radial ball bearings with stop ring JIS B 1561

Poland

4 stds for ball and roller bearings PN M-86136 - 56 M-86183, -195/6 - 55
17 stds for different ball and roller bearings PN Series M - 86

Roumania (CSS)

Ball and roller bearings, general survey of types STAS 5115-56

Spain (IRATRA)

Transmission brackets UNE 18 013
Tolerances for radial ball-bearings, normal quality of UNE 18 031
Ceiling brackets for the supporting of ball-bearings UNE 18 044
Plummer block with ball-bearing UNE 18 045

Switzerland (SNV)

End-shaft coupling flanges for shaft diameters from 14 to 750 mm VSM 15338, Bl.1, 2
Wrenches for end-shaft coupling flanges VSM 15339, Bl.1, 2
Rigid couplings, type R (friction): general survey VSM 15351
Rigid couplings, details of different types (15 stds) VSM 15353/67

USSR

Journals for heavy calendars GOST 7999-56

621.86/.87 HOISTING AND CONVEYING MACHINERY

Belgium (IBN)

Rubber-belt conveyors for non-acid products, temperature of which is under 90 C NBN 391-56
Code of good practice for construction of passenger and freight elevators NBN 250-55

Bulgaria

Chain hoists BDS 2216/7 -56

Czechoslovakia (CSN)

Screw conveyors (7 stds) CSN 26 28
Conveyors, movable (10 stds) CSN 26 32

Denmark (DS)

Lifting chains, uncalibrated, short linked. Manufacturing, testing, and maintenance. DS 363

France (AFNOR)

3 stds for pallets, terminology, general and special types RN H 50 - 000, NF H 50 - 001/002

Germany (DNA)

Counter-weights for elevator cage DIN 15316

Japan (JISC)

Test for chain hoist JIS B 8802 *

Netherlands (HCNN)

Fork-trucks, nomenclature of parts N 949
Fork-trucks. Technical data NEN - 3054

Roumania (CSS)

Jacks, tackles, winches, derricks, cranes, etc: general survey STAS 2844-55

United Kingdom (BSI)

Power-driven rail-mounted tower cranes BS 2799:1956
Lifting attachments for packing cases BS 2837:1957

USSR

4 stds for overhead travelling cranes GOST 3332-54, 7131-54, 7464-55, 7532-55
2 stds for electric hoists GOST 7486, 3472
Hand operated travelling hoist GOST 7413-55
Overhead monorail electric grab dredger GOST 7485-55
Tower crane on rails GOST 7379-55
Autoloading trucks, etc GOST 7154-54
Disc-type feeder for crushed materials GOST 7202-54
Table-type loading conveyors GOST 7424-55
Hoisting and conveying machinery, hand and mechanically operated, std lifting capacities GOST 1575-54
Portal crane, electric, capacity up to 15 tons GOST 7994-56
Fork-truck automatic loaders GOST 7910-56

621.88 MEANS OF ATTACHMENT FASTENINGS

Austria (ONA)

Fin-neck carriage bolts ÖNORM M 5026
3 stds for set screws with cup-, cone-, and dog-points ÖNORM M 5171/3

Bulgaria

22 stds for screws for metals (bound in one booklet) BDS 1358/77, 661, 832

France (AFNOR)

Shakeproof lock washers NF E 27-618

Germany (DNA)

7 stds for different shapes of grooved pins DIN 1471/7
Hexagon head with dog point DIN 560
Hexagon head thru-bolt DIN 7968
Hexagon head bolt with hexagon nut for steel structures DIN 7990
Washers, round, for bolts DIN 7989
9 stds for self-tapping screw for sheet metal, different heads DIN 7970/4,/6,81/83

India (ISI)

Copper wire nails IS 725 - 1956

Japan (JISC)

Inspection and testing of rivets JIS B 1123-1952 *
2 stds for rivets for boilers JIS B 1210/11-1952 *
Screw drivers JIS B 4609-1954 *
Pliers JIS B 4614-1955 *
3 stds for different handles for socket wrenches JIS B 4638-,40/1-1955 *
Universal joint for socket wrench JIS B 4639-1955 *
Pipe vise JIS B 4642-1955 *
2 stds for hexagon socket head bolts, Whitworth JIS B 1166/7

BOOKS.....

Heating Ventilating and Air Conditioning Guide – 1957. *Thirty-fifth edition. 6 x 9. Cloth bound. Technical Data Section 1250 pp, plus Catalog Data Section. American Society of Heating and Air-Conditioning Engineers, 62 Worth Street, New York 13, N.Y. $12.00.*

This new edition reflects a steady growth in technical information and completion of several projects on which Technical Advisory Committees of the Society and many individual engineers have been engaged for a number of years.

Chapter 9—Heat Transmission Coefficients of Building Materials, and Chapter 44—Control of the Industrial Environment, have been completely revised and rewritten.

In Chapter 9 there is a new set of U-value tables covering many more constructions than in previous editions. Prepared by the ASHAE Technical Advisory Committee on Insulation, each table contains an illustration with accompanying calculation of one U-value and an explanation of how to convert U-values to changes in construction and materials.

In Chapter 44 a new method is described for establishing standards for indicating heat stress. A new chart permits combining the effects of various factors into a single heat stress index. Methods of controlling heat exposure include: (*a*) control at source; (*b*) exhaust ventilation; (*c*) radiation shielding; and (*d*) local relief. Methods also are given for controlling air contaminant concentrations.

There are 115 new illustrations and many new tables in the 1957 edition. The chapter covering methods of applying sound control principles has been rewritten with new charts and tables and a typical example of their use. There is a new presentation for the design of hot water heating systems; and a step-by-step procedure for designing ceiling and floor heating panels. Simplified design data for forced warm air systems have been added. Refrigerant data have been extended and information on lithium bromide equipment added.

Much of the information in this edition was made possible through work conducted at the ASHAE Research Laboratory, Cleveland, Ohio, under the guidance of the Society's Committee on Research and with the assistance of numerous ASHAE Technical Advisory Committees.

Dimensions of Electronic Tubes and Valves. *IEC Publication 67. 1957. International Electrotechnical Commission, 1 rue de Varembé, Geneva, Switzerland. $3.20.*

This publication contains in Part I tables of dimensions with the necessary tolerances for the bases of electronic tubes and valves, as well as for gages associated with them. Part II gives standard dimensions with tolerances for the outlines of electronic tubes and valves, and associated gages. Dimensions and tolerances for electronic tube and valve caps are given in Part III.

The dimensions of the bases and the caps apply to the finished tubes or valves.

Specification for Fixed Paper Capacitors for Direct Current, IEC 80. *First edition. 1956. International Electrotechnical Commission, 1, rue de Varembe, Geneva, Switzerland. (Copies available from the American Standards Association, 70 East 45 Street, New York 17, N. Y.) $3.20.*

This international document recommends uniform requirements for judging the mechanical, electrical, and climatic properties of capacitors, describes test methods, and gives standard dimensions. It also classifies capacitors into groups according to their ability to withstand

extremes of temperature, humidity, pressure, or mechanical stress. The recommendations are for the use of national standards organizations with a view to bringing about greater uniformity in national standards of the countries represented in IEC.

IEC Recommendation 80 consists of four sections: Section 1, Explanation of terms, classification into groups, standard values and tolerances, rated temperature ranges, marking, type acceptance tests, and production tests; Section 2, Schedule for type acceptance tests, standard conditions for testing, material and workmanship, electrical tests, mechanical and climatic tests, endurance tests; Section 3, Color code; Section 4, Dimensions.

The book is published in French and English.

International Electrotechnical Vocabulary. *Second edition. Electric Traction, Group 30. IEC publication 50 (30). 1957. International Electrotechnical Commission, 1 rue de Varembé, Geneva, Switzerland. (Copies available from the American Standards Association, 70 East 45 Street, New York 17, N.Y.)* $3.50

Although numbered Group 30, this document is the eleventh of 22 groups which form the second edition of the international vocabulary of electrical terms. Its aim is to provide definitions which are sufficiently clear so that each term can be understood by all electrical engineers. The definitions are given in French and English, but the terms themselves are also given in six other languages: German, Spanish, Italian, Dutch, Polish, and Swedish. The USSR National Committee of IEC is preparing an edition of the vocabulary in the Russian language.

Group 30 contains some 370 terms and definitions under the headings: General terms used in relation to traction; Tracks and contact systems; and Rolling stock.

William D. Appel Receives Textile Committee Award

William D. Appel, chief, Textiles Section, National Bureau of Standards, received the Harold De Witt Smith Memorial Medal this year. Committee D-13 on Textile Materials of the American Society for Testing Materials presented the Medal to Mr Appel during the spring meeting of the committee March 19-22.

The medal is a testimonial to the memory of the late Harold De Witt Smith who was a pioneer in use of an engineering approach to evaluation of properties of textile fibers. It was endowed by Fabric Research Laboratories, Inc, Boston, and is awarded at intervals of not less than one year for outstanding achievement in research on fibers and their utilization.

Mr Appel has had a long and distinguished career as a scientist and as a leader in research. He has given valuable service to the textile industry through his activities in various scientific and technical associations and societies.

Mr Appel joined the National Bureau of Standards in 1922.

Under his leadership the work of the Bureau's Textiles Section has expanded and new knowledge has been applied vigorously to problems in textiles. He has published over 50 papers and reports.

Mr Appel has taken a prominent part in the development of standard test methods and specifications. He served three terms of two years each as chairman of ASTM Committee D-13. He is chairman of ASA Committee L23, the USA committee for ISO/TC 38 on Textiles, and in 1948 was a delegate to the organization meeting of this international committee. He was also leader of the USA delegations to meetings of TC 38 in England in 1951 and 1956. He is a member of ASA sectional committees on textile test methods, bedding and upholstery, rayon fabrics, and institutional textiles.

Mr Appel has had many honors. He received the War Department Certification of Appreciation for Patriotic Services during World War II and also the American Standards Association Certificate of Appreciation for his services in development of American War Standards. In 1953 he received the Department of Commerce Gold Medal for Exceptional Service. In 1954 he was awarded the Olney Medal, highest award of the American Association of Textile Chemists and Colorists. He was THE MAGAZINE OF STANDARDS Personality of the Month in July 1956, and his report on the international standards work on textiles was published in the February 1957 issue, pages 38-40.

NEWS BRIEFS.....

• Another step has been taken toward a merging of the metric and inch standards into one single universal standard of dimensions for integral horsepower motors. This step was taken at a meeting of a Working Group of Subcommittee 2B of the International Electrotechnical Commission at Paris, December 10-12, 1956. Twenty-two representatives from nine countries attended—Belgium, France, Germany, India, Italy, Sweden, Switzerland, United Kingdom, and USA. A representative from the International Organization for Standardization was also present.

The main objective of this Working Group was to consider the comments of all countries, and make recommendations concerning a proposal put forward by India, outlining one single series of motor dimensions to be obtained by utilizing certain dimensions from each of the two existing series (metric and inch), now shown as Recommendations in IEC Publication 72.

It was also hoped to develop a single series of dimensions for motors of shaft heights smaller than 4½ in. (112 mm) and also a series of dimensions for motor mounting flanges.

C. W. Falls, General Electric Company, Schenectady, N. Y., chief USA delegate to the meeting, reports that progress was made toward attaining all three objectives. He expects that the results will be compiled and sent to IEC members soon for their consideration and subsequent vote, although it is quite possible that another meeting will be necessary.

Mr Falls declares that the difficulties in arriving at a consensus arose "as usual" because of the impossibility of translating acceptable values in millimeters to equally acceptable values in inches, and vice versa. "A nicely rounded figure or preferred number in millimeters becomes an absurd fraction or decimal when translated into inches," he points out. "For example, an 180 millimeter shaft height becomes 7.087 in. for a nominal 7-in. shaft height, or conversely, an 18-in. flange becomes a 457-mm flange. Proponents of both systems naturally wish to retain even, well rounded or preferred numbers, and this obviously perpetuates the use of two series."

In the table of motor dimensions for future design, Mr Falls reports, millimeter values have been exactly translated from the inch values given in NEMA standards.

This was not done in the case of

Standards in Purchasing

Recently a widely circulated hospital magazine ran a feature article on supplier-buyer relationships. Many of the remarks bore directly on the use of specifications and standards. The Hospital Bureau of Standards and Supplies took issue with some of these statements in its *Bureau Research News*, July 1956. In this issue, the *News* carried a selection of some of the statements made, with an analysis giving its own opinion concerning the validity of the statements. This analysis, published below, will undoubtedly be of interest to all concerned with the use of standards and purchasing, even though it is directed specifically to the problems of hospitals and similar institutions.

Reprint From *Bureau Research News* below –

Statement (taken from article): The purchasing agent's basic philosophy—to contribute to the best patient care possible—is too intangible to evaluate in terms of buying.

Answer (as we see it). False. The objective of any purchasing job is to spend funds in such a way as to obtain maximum value. The best interests of the patients require that all purchasing dollars be stretched to yield the greatest value; otherwise, fewer dollars will be available to finance other hospital services. Thus there is a direct relationship between sound buying and patient care.

S. The purchasing agent must know how the supplies he is buying are being used.

A. True. A cardinal principle of buying is that the material purchased should be the best (i.e., most suitable and economical) available for the particular use. From his continual contacts with vendors, the buyer is in the best position to know whether a better "buy" is possible. But without knowing the precise end use for which the material is bought, he has no sound basis upon which to judge its relative merits.

S. The purchasing agent must know all the technical and commodity data on all hospital items.

A. False. No one can be an expert on the thousands of kinds of materials he may be called upon to obtain. Good judgment, based wherever possible upon written specifications, will usually see the purchaser through many unfamiliar buying mazes.

S. A salesman can be of great help in keeping the buyer informed on new products and developments.

A. True. But how many salesmen, even if well-informed, are willing to discuss any developments other than those being promoted by their own companies?

S. Supplier service includes demonstration of equipment and a pro-

shaft heights, he explains, because these dimensions are more critical in the application of motors and must be treated differently. Surveys of user groups, taken both in Great Britain and the United States just prior to the Paris meeting, disclosed that users objected to changing from the well rounded and long established shaft heights, such as, for example, 7, 8, 9, and 10 in., to the exact equivalents of the millimeter system, namely, 7.087 in., 7.874, 8.858, and 9.843 in., respectively. Users preferred very large tolerances on the shaft height rather than values deviating in both directions from the NEMA shaft heights. In an alternate table of shaft heights, an attempt has been made to meet the wishes of users until such time as changes to the exact millimeter equivalents are worked out.

• An international conference on color is being held May 20-22 at Amiens, France, in the Picardy Museum. Organized by the Color Information Center, the conference is being held under the auspices of Government authorities. Sessions will include discussion of scientific problems concerned with color; technical problems in the application of color in a number of industries (including the graphic arts; photography; and advertising); teaching about color and its use; color in the arts; colors for textiles.

Stuart E. Hockenbury

• Stuart E. Hockenbury, vice-president of the American Hotels Corporation, New York, has been named by the American Hotel Association as its representative on the Standards Council of the American Standards Association. The Council is ASA's governing body on technical questions, representing all ASA's Member-Bodies.

Mr Hockenbury started his career as manager of the Hotel Dagmar, Hagerstown, Maryland, and had experience in a number of hotels as manager and general manager before he became operating vice-president of the American Hotels Corporation. He holds directorships in seven hotels in Connecticut, New York, Pennsylvania, and Rhode Island, in addition to the American Hotels Corporation. He is also a director of the Princeton Municipal Improvement, Inc.

For two years during the war Mr Hockenbury served on the aircraft carrier, USS Bunker Hill, and has received military awards including the Bronze Star with V; the Presidential Unit Citation with Star; the Asiatic-Pacific Medal with Eleven Stars; and others.

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gram of preventive maintenance and repair. Although such services add to the price, they are necessary features of suppliers' aid.

A. False. Except for the initial demonstration (which often calls for a factory representative), most so-called service of this type is *lip* service. Equipment requiring specialized technical training cannot be serviced by the average dealer representative. Should anything radical go wrong, the factory expert must be called in to perform the adjustment or repairs. Unless a maintenance program lists specific services, claims of this nature should be largely discounted by the purchaser.

S. Proper supplier service includes (a) advice on merchandise quality, (b) inventory recommendations, and (c) keeping customers informed of market conditions.

A. Almost entirely false. In the order mentioned, these are the facts:

(a) On standard merchandise, where specifications have been long established, the intelligent buyer can decide for himself whether an item is of suitable quality. Example: most surgical dressings conform to recognized standards.

(b) Inventory should not be based upon the sales ability of the supplier's representative, but should be controlled from the hospital's own experience. A set of perpetual inventory cards is all that is needed.

(c) Market conditions in hospital supplies are virtually meaningless except in times of national emergency. Unlike industrial raw materials, hospital supplies are distributed with scarcely a ripple of uncertainty.

S. Suppliers all sell essentially the same merchandise; the difference is in the service.

A. Applied to standardized goods, this is a half-truth. The merchandise in many instances is of comparable quality. With such items, however, where no maintenance or repair is involved, the only real service would be for emergency deliveries. A well-organized purchasing department with adequate inventory control should seldom require this type of "service."

S. "Off-brand" merchandise is the stock-in-trade of the "carpetbagger." The only way to get full value is to buy "standard" goods (at "standard" prices) from an "established" dealer.

A. False. This is not so much an un-truth as a matter of loose, generalized thinking. What is the difference between "off-brand" and "standard" goods—a million dollars' worth of advertising?

"Our members are invited to compare their answers with the ones supplied above," said the *Bureau Research News*.

AMERICAN STANDARDS UNDER WAY

Status as of April 26, 1957

Legend — *Standards Council* — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks. *Board of Review* — Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks. *Standards Board* — Approves standards to send to Standards Council or Board of Review for final action; approval by standards boards usually takes 4 weeks.

Note — Send check when ordering standards listed as published to avoid service charge for handling.

AUTOMOTIVE

American Standard Published

Inspection Requirements for Motor Vehicles, D7.1-1956 $1.00
Sponsors: American Association of Motor Vehicle Administrators; Association of Casualty and Surety Cos.

BUILDING AND CONSTRUCTION

American Standard Approved

Reinforced Concrete, Building Code Requirements for, ACI 318-56; ASA A89.1-1957 (Revision of ACI 318-51; ASA A89.1-1951)
Sponsor: American Concrete Institute

In Board of Review

Abrasion of Coarse Aggregate by Use of the Los Angeles Machine, Method of Test for, ASTM C 131-55; ASA A37.7- (Revision of ASTM C 131-51; AASHO T96-51; ASA A37-1954)

Distillation of Tars and Tar Products, Method of Test for, ASTM D 20-56; ASA A37.9- (Revision of ASTM D 20-52; AASHO T52-52; ASA A37.9-1954)

Sieve Analysis of Mineral Filler, Method of Test for, ASTM D 546-55; ASA A37.14- (Revision of ASTM D 546-41; AASHO T37-42; ASA A37.14-1943)

Unit Weight of Aggregate, Method of Test for, ASTM C 29-55; ASA A37.16- (Revision of ASTM C 29-42; AASHO T19-54; ASA A37.16-1948)

Making and Curing Concrete Compression and Flexure Test Specimens in the Field, Method of, ASTM C 31-55; ASA A37.17- (Revision of ASTM C 31-49; ASA A37.17-1951)

Compressive Strength of Molded Concrete Cylinders, Method of Test for, ASTM C 39-56T; ASA A37.18- (Revision of ASTM C 39-49; AASHO T22-49; ASA A37.18-1951)

Organic Impurities in Sands for Concrete, Method of Test for, ASTM C 40-56T; ASA A37.19- (Revision of ASTM C 40-48; ASA A37.19-1951)

Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate, Method of Test for, ASTM C 88-56T; ASA A37.23- (Revision of ASTM C 88-46T; AASHO T104-46; ASA A37.23-1948)

Lightweight Pieces in Aggregate, Method of Test for, ASTM C 123-53T; ASA A37.25- (Revision of ASTM C 123-44; AASHO T113-45; ASA A37.25-1948)

Clay Lumps in Natural Aggregates, Method of Test for, ASTM C 142-55T; ASA A37.28- (Revision of ASTM C 142-39; AASHO T112-42; ASA A37.28-1948)

Sampling Fresh Concrete, Method of, ASTM C 172-54; ASA A37.30- (Revision of ASTM C 172-52T; ASA A37.30-1954)

Terms Relating to Materials for Roads and Pavements, Definition of, ASTM D 8-55; ASA A37.33- (Revision of ASTM D 8-52; ASA A37.33-1954)

Emulsified Asphalts, Method of Testing for, ASTM D 244-55; ASA A37.42- (Revision of ASTM D 244-49; AASHO T59-49; ASA A37.42-1951)

Distillation of Cut-Back Asphaltic Products, Method of Test for, ASTM D 402-55; ASA A37.45- (Revision of ASTM D 402-49; ASA A37.45-1951)

Preformed Expansion Joint Fillers for Concrete (Nonextruding and Resilient Types), Specification for, ASTM D 544-49; ASA A37.49- (Revision of ASTM D 544-41; AASHO M58-42; ASA A37.49-1948)

Emulsified Asphalt, Specification for, ASTM D 977-53; ASA A37.55- (Revision of ASTM D 977-49; ASA A37.55-1951)

Cotton Mats for Curing Concrete Pavements, Specifications for, AASHO M73-49; ASA A37.60- (Revision of AASHO M73-38; ASA A37.60-1948)

Subgrade Paper, Specifications for, AASHO M74-55; ASA A37.61- (Revision of AASHO M74-38; ASA A37.61-1948)

Quality of Water to be Used in Concrete, Method of Test for, AASHO T26-51; ASA A37.62- (Revision of AASHO T26-36; ASA A37.62-1948)

Ready-Mix Concrete, Specification for, ASTM C 94-55T; ASA A37.69- (Revision of ASTM C 94-48; ASA A37.69-1951)

Air Content of Freshly Mixed Concrete by the Pressure Method, Method of Test for, ASTM C 231-56T; ASA-A37.70- (Revision of ASTM C 231-54; ASA A37.70-1954)
Sponsor: American Society for Testing Materials

In Standards Board

Steel for Bridges and Buildings, Specifications for, ASTM A 7-56T; ASA G24.1- (Revision of ASTM A 7-55T; ASA G24.1-1956)
Sponsor: American Society for Testing Materials

Reaffirmation Requested

Residue of Specified Penetration, Method of Test for, ASTM D 243-36; AASHO T56-42; ASA A37.13-1943, R1948)
Sponsor: American Society for Testing Materials

New Project Requested

Mounting Dimensions of Door Locks and Flush Bolts
Requested by: National Builders' Hardware Association

ELECTRIC AND ELECTRONIC

American Standard Published

Focal Spot Size of Diagnostic X-Ray Tubes (not exceeding 150 pkv), Method of Measurement of, Fed Std 83; ASA C90.1-1957 $0.35
Sponsor: Federal Supply Service, General Services Administration

American Standards Approved

Conducted Interference Output of Broadcast and Television Receivers in the Range of 300 KC to 25 MC, Methods of Measurement of, 56 IRE 27.S1; ASA C16.25a-1957 (Supplement to ASA C16.25-1955)

Terms on Facsimile, Definitions of, 56 IRE 9S1; ASA C16.30-1957
Sponsor: Institute of Radio Engineers

In Board of Review

Electrically Heated Pads and Bedding, Safety Standard for, C33.7-
Sponsor: Underwriters' Laboratories

In Standards Board

Definitions of Electrical Terms, (partial revision of C42-1941)
Group 10, Rotating Machinery, C42.10-
Group 30, Instruments, Meters, and Meter Testing, C42.30-
Sponsor: American Institute of Electrical Engineers

Standard Submitted

400-Watt BT-37 Fluorescent Mercury Vapor Lamp, Dimensional and Electrical Characteristics of, C78.1304-

400-Watt BT-37 Mercury Vapor Lamp, Dimensional and Electrical Characteristics of, C78.1305-

Sponsor: Electrical Standards Board

Reaffirmation Being Considered

Electricity Meters, Code for, C12-1941, including Supplement, C12a-1947

Sponsors: Electric Light and Power Group; National Bureau of Standards

American Standard Withdrawn

Tubular Steel Poles for Electric Line Construction, Specifications for, C13-1926

Sponsor: American Transit Association

GAS BURNING APPLIANCES

American Standards Published

Hotel and Restaurant Gas Ranges and Unit Broilers, Approval Requirements for, Z21.3-1956 $2.00

Portable Gas Baking and Roasting Ovens, Approval Requirements for, Z21.28-1956 $2.00

Sponsor: American Gas Association

MATERIALS AND TESTING

American Standards Published

High-Strength Structural Rivet Steel, Specification for, ASTM A195-52T; ASA G42.1-1956

Annealing requirements, chemical composition and tensile properties of steel which with proper riveting technique is suitable for use with structural silicon steel and equivalent steels.

ASTM Thermometers, Specifications for, ASTM E 1-56; ASA Z71.1-1956 (2nd edition) $0.75

Requirements for etched-stem liquid-in-glass thermometers graduated in Centigrade or Fahrenheit degrees which are frequently specified in methods of the American Society for Testing Materials.

Sponsor: American Society for Testing Materials

In Standards Board

Structural Steel for Locomotives and Cars, Specification for, ASTM A 113-56; ASA G39.1-1956 $0.50

Sponsor: American Society for Testing Materials

MECHANICAL

American Standard Published

Gray Iron Castings, Specifications for, ASTM A 48-56; ASME SA-48; AASHO M 105; ASA G25.1-1956 $0.30

Tension and alternate transverse test requirements and procedures for gray iron castings in which strength is a consideration. Eight classes of castings are covered with a tensile strength range of 20,000 to 60,000 psi.

Sponsor: American Society for Testing Materials

In Standards Board

Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service, Specification for, ASTM A 194-56T; ASA G38.1- (Revision of ASTM A 194-55T; ASA G38.1-1956)

Sponsor: American Society for Testing Materials

Reaffirmation Being Considered

Large Rivets, B18.4-1950

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

American Standard Withdrawn

Carbon-Steel Castings for Valves, Flanges and Fittings for High-Temperature Service, Specifications for ASTM A 95-44; ASA G17.1-1944

Sponsor: American Society for Testing Materials

MEDICAL

Project Being Considered

Filters for Biologicals and Sterile Pharmaceuticals

Recommended by: American Drug Manufacturers Association

MINING

Withdrawal Being Considered

Fire Fighting Equipment in Metal Mines, M17-1930

Sponsors: American Mining Congress; National Fire Protection Association

NUCLEAR ENERGY

In Standards Board

Glossary of Terms in Nuclear Science and Technology, N1.1-

Submitted by: National Research Council

PETROLEUM PRODUCTS AND LUBRICANTS

American Standards Published

Copper Corrosion by Petroleum Products, Copper Strip Test, ASTM D 130-56; ASA Z11.21-1956 $0.30

Apparatus, materials, procedure, interpretation and report for the detection of the corrosiveness to copper of aviation gasoline, automotive gasoline, farm tractor fuel, cleaners (Stoddard) solvent, diesel fuel, fuel oil (distillate) and certain other petroleum products.

Olefinic Plus Aromatic Hydrocarbons in Petroleum Distillates, Method of Test for, ASTM D 1019-56T; ASA Z11.71-1956 $0.30

Apparatus, reagents, procedure, calculation and report for determination of olefinic plus aromatic hydrocarbons in gasolines, naphthas, kerosines, and other petroleum distillates that are substantially free from butanes and butenes and that have a 90 percent point not over 600 F, when determined in accordance with ASTM Method D 86 (ASA Z11.10), Test for Distillation of Gasoline, Naphtha, Kerosine and Similar Petroleum Products. The method is not applicable to determinations above 98.5 percent olefins plus aromatics if a 10-ml sample is used, nor above 97.0 percent if a 5-ml sample is used.

Sponsor: American Society for Testing Materials

PHOTOGRAPHY

American Standards Published

32mm Motion-Picture Film, 2R-3000, Dimensions for, PH22.71-1957 $0.25

32mm Motion-Picture Film, 4R-3000, Dimensions for, PH22.72-1957 $0.25

35mm Anamorphic Prints with Magnetic Sound Records, Usage in Projector, PH22.103-1957 $0.25

Projector Aperture for 35mm, Anamorphic, 2.55:1 Prints with Squeeze Ratio of 2:1, PH22.104-1957 $0.25

Sponsor: Society of Motion Picture and Television Engineers

In Standards Board

Projected Image Area of 16mm Motion-Picture Film, PH22.8- (Revision of Z22.8-1950

Projected Image Area of 8mm Motion-Picture Film, PH22.20- (Revision of Z22.20-1950)

16-Tooth 35mm Motion-Picture Projector Sprockets, PH22.35- (Revision of Z22.35-1947)

Photographic Sound Record on 16mm Prints, PH22.41- (Revision of Z22.41-1946)

Sponsor: Society of Motion Picture and Television Engineers

PIPE AND FITTINGS

In Standards Board

Computation of Strength and Thickness of Cast Iron Pipe, Manual for, A21.1- (Revision of A21.1-1939)

Sponsors: American Gas Association; American Society for Testing Materials; American Water Works Association; New England Water Works Association

Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves, and Parts for High-Temperature Service, Specifications for, ASTM A 182-56T; ASA G37.1- (Revision of ASTM A 182-55T; ASA G37.1-1956

Sponsor: American Society for Testing Materials

SAFETY

American Standard Published

Installation and Operation of Pulverized-Coal Systems, Safety Code for, NFPA 60A; ASA Z12.1-1957 $0.35

Sponsor: National Fire Protection Association

Withdrawal Being Considered

Inert Gas for Fire and Explosion Prevention, NFPA 12A, ASA Z12.10-1943

Sponsor: National Fire Protection Association

TEXTILES

American Standards Approved

Definitions of Terms Relating to Textile Materials, ASTM D 123-55; ASA L14.12-1957

Fineness of Wool, Method of Test for, ASTM D 419-55T; ASA L14.26-1957

Fineness of Wool Tops, Method of Test for, ASTM D 472-56; ASA L14.29-1957

Fiber Leneth of Wool Tops, Test for, ASTM D 519-55T; ASA L14.32-1957

Sponsors: American Association of Textile Chemists and Colorists; American Society for Testing Materials

American Standard Withdrawn

Testing Cotton Fibers, General Methods for, L14.23-1951

Sponsors: American Association of Textile Chemists and Colorists; American Society for Testing Materials

WHAT'S NEW ON AMERICAN STANDARDS PROJECTS

Cast Iron Pipe and Fittings, A21—

Sponsors: American Gas Association; American Society for Testing Materials; American Water Works Association; New England Water Works Association

The proposed revision of A21.1-1939 is now in the hands of the sponsors. The enlarged and expanded Standard Manual for the Computation of Cast Iron Pipe Strength and Thickness now consists of 40 pages of principles and methods and 121 pages of pipe thickness tables for the two types of cast iron pipe and the various laying conditions.

Building Code Requirements for Fire Protection and Fire Resistance, A51—

Sponsor: National Board of Fire Underwriters

The Construction Standards Board at its March 21 meeting accepted the recommendations of its Executive Committee that the A51 project be reactivated and its scope be reviewed in the light of present and possible future developments. A committee will be appointed by the CSB chairman to draw up recommendations in regard to scope, constitution, and sponsors. The project is considered to be the foundation for much of the building code standardization program.

Safety Code for Mechanical Refrigeration, B9—

Sponsor: American Society for Refrigerating Engineers

Suggestions for a proposed revision of American Standard B9.1-1953 have been circulated to the sectional committee for consideration. The committee plans to meet during the summer to consider the proposals.

Coordination of Dimensions of Building Materials and Equipment, A62—

Sponsors: The Producers' Council; American Institute of Architects; National Association of Home Builders; Associated General Contractors of America

The reorganization and reactivation of the work of Committee A62 is well under way. The sponsor organizations have met with C. E. Silling, new chairman of the committee, to plan the future program. Liaison is being established with the newly undertaken activity on the same subject in Canada.

F. C. Frost, civil engineer on the staff of the American Standards Association, reports that significant progress is being made toward adoption of a common module (10 cm and 4 in.) by the eleven European countries participating in the European Productivity Agency (EPA) Project 174 on modular coordination. Mr Frost attended a meeting on this subject at the request of the International Cooperation Administration at EPA Headquarters in Paris, February 25-26.

The countries taking part in the project requested that USA participate directly in this work through ASA and ASA Project A62. A contract to cover preparation of a report to show how the modular principle has been applied in this country was discussed with the EPA in Paris. It is now under consideration by ASA.

Materials Handling, MH Projects—

Projects on materials handling and packaging are to be assigned their own ASA project letters so as to distinguish them from other engineering fields. The letters "MH" have been assigned to these projects. Existing projects that have been redesignated, are:

Pallets (formerly B69), MH1
Steel Containers (Proposed Project), MH2
Motor Oil Cans (formerly B64), MH3
(The three standards which bear B64 numbers will be changed when they are reviewed for reaffirmation or revision)
Conveyor Terms and Definitions (formerly B75), MH4
(The one standard having a B75 number will be changed upon reaffirmation or revision.)

Steel Containers, MH2—

Proposed Sponsor: Packaging Institute

Standards for ten steel containers have been submitted for approval as American Standard by the Packaging Institute. These standards, covering drums ranging from 5-gallon to 55-gallon capacities, were prepared by the Petroleum Packaging Committee of the Institute. The ASA is now conducting a canvass of organizations substantially concerned to determine the acceptability of the standards. Since the ASA has never been called upon to approve standards for this type of product, the establishment of a new project on steel containers will be considered at the same time.

American Table of Distances for the Storage of Explosives, M29—

Sponsor: Institute of Makers of Explosives

There is no immediate promise that the military and the M29 sponsor will soon resolve their differences on the formula to be used for determining safe distances for various amounts of stored explosives. The Table, submitted for approval as American Standard by the Institute of Makers of Explosives, is already quoted or incorporated in other American Standards, such as the

Safety Code for Building Construction, A10.2-1944, Safety Code for Use of Explosives in Bituminous Coal Mines, M14-1940, and Safety Procedures for Quarries, M28.1-1955. Biggest difference between the military and IME concerns the effect of barricades. The military believe that, for quantities of explosives in excess of 250,000 pounds, barricades are ineffective and should not be considered as a basis for shortening the distance between storage places for explosives and inhabited buildings. The Table permits 50 percent reduction in distance for barricades. The military also recommend a factor that somewhat increases the distance between barricaded storage places and inhabited buildings over the distance permitted in the Table for amounts of explosives from 10,000 to 250,000 pounds. It also recommends increasing distances between barricaded magazines for all amounts of stored explosives.

Library Work and Documentation, Z39—

Sponsor: Council of National Library Associations

The subcommittee on abbreviations of titles of periodicals has nearly completed a record of abbreviations used by the important abstracting and indexing services in the United States. The list has been placed on cards so it can be studied to determine where confusing usage occurs. A number of the abstracting and indexing services have assured the subcommittee they will give serious consideration to using the standard abbreviations when standards have been completed.

Method of Measurement of Focal Spot Size of Diagnostic X-Ray Tubes (not exceeding 150 pkv)—

The Federal Supply Service, General Services Administration, has been named Proprietary Sponsor to handle future revisions of this recently approved American Standard, submitted to ASA by the Service as Federal Standard No. 83.

Standards Outlook

by LEO B. MOORE

Mr Moore is Assistant Professor of Industrial Management of Massachusetts Institute of Technology where he teaches a full-term course in industrial standardization.

Standards by Design

Some time has passed since I first saw the following bit of amusing verse. The problem of standards in relation to design engineering recalled it to mind, and it is presented here with the author's permission.

Designing Designer

The designer bent across his board,
Wonderful things in his head were stored,
And he said as he rubbed his throbbing bean,
"How can I make this thing tough to machine?
If this part here were only straight,
I'm sure the thing would work first rate.
But 'twould be so easy to turn and bore,
It would never make the machinists sore.
I'd better put in a right angle there,
Then watch those babies tear their hair.
Now I'll put the holes that hold the cap
Way down in there where they're hard to tap.
Now this piece won't work, I'll bet a buck,
For it can't be held in a shoe or chuck.
It can't be drilled or it can't be ground;
In fact, the design is exceedingly sound."
He looked again and cried, "At last!
Success is mine, it can't even be cast."

— F. Rankin Weisgerber

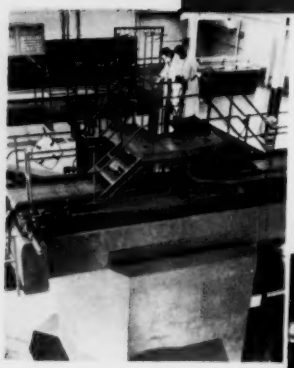
And I'm sure that some standards engineer might like to add with humble apologies to the author,

"And what makes my glad heart really sing,
No standard, in any part of the thing."

To some extent then we may join the composer of this eternal lament of the production group concerning the man with the ideas and the drafting pen. In this good-natured vein we are reminded of the tremendous impact of the design decision upon the rest of the operations of the company.

Trying then to take the positive attitude about the responsibility of design engineers to employ company standards with more frequency and willingness, could we not convey with more clarity to every design man this extensive relationship of his every decision to all other company operations? This might be done through a chart or picture entitled "when a designer decides."

This could be a picture showing the chain reaction impact of his decision on many areas, details, and decisions, starting from the purchase requisition on through production into the selling, installation, service, and maintenance of the product. This picture might show the great value of the decision already made and of the experience already gained in the form of an existing standard, as well as the need to have a good reason for using a non-standard. Such a picture might help us place upon every print the notation — "designed with standards in mind."



WTK Department
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In this issue management will want to know—

—what is going on to give industry protection with voluntary standards for use of nuclear energy? *page 129; 131*

Your President and Executive Vice-President will want to know

—will production methods be changed through use of voluntary standards for nuclear energy?—what about new quality requirements for steel valves? *page 135*

Your Production Manager and Chief Engineer will want to know

—what new American Standards are available for use in purchasing? *page 152*

—what changes have been made in standards for automatic control equipment? *page 140*

—what new American Standards are being developed for use in design and production? *page 154*

Your purchasing, design, electrical engineering, and production people will want to know

—which sessions will be of special interest at the National Conference on Standards? *page 144*

All management will want to know

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